Extract from notes in R.O.File 83 of 1935

(Newspaper Cuttings)

86

The following cuttings are submitted:

1. * * *

2. * * *

3. Bangalore City Underground drainage scheme.

The Hindu
11/2/35

Id/- K.C.
15/2/35

Id/- P.K.N.
15/2

(M)

87

"A copy of No.3 should go to our file dealing with Sewage disposal scheme. How will this affect our scheme that there should eventually be one Sewage disposal plant for City and C. and M. Station areas?"

Id/- C.G.N.E.
16-2-35.

88

The Resident personally handed over this file to me with the following instructions:-

(i) The map of the Civil and Military Station showing the proposed site for the location of the sewage disposal plant and main sewers - which formed an enclosure to Executive Engineer's report on the scheme- to be replaced by a fresh map showing the sewers etc. in distinct colours drawn in ink. The map should be properly and fully referenced and mounted on cloth.

(ii) Another map of the Civil and Military Station- similar to the above-showing the under-ground sewerage scheme of the Station, both existing and proposed, to be prepared and added to the enclosures to the letter to the Government of India.

(iii) The enclosures to be properly arranged and a detailed list prepared for being sent to the Government of India for reference.

(iv) The draft to be revised in accordance with Resident's oral instructions.

89

Instructions (i) and (ii) above.

The Executive Engineer has prepared and sent two maps in accordance with Resident's instructions. They are retained in office.

They should be kept for Resident's inspection 2/3

90

Instruction (iii).

Please see para 3 of the draft and the detailed list attached to it.

Instruction

91 Instruction (iv).

A revised draft is submitted for consideration.

92 Reference para 87 ante.

The Mysore Government's scheme relates to underground drainage in the City including the laying of a main sewer line from Sultanpet to Sunkal Farm, which is City's main out-fall. There does not appear to be at present any proposal for the erection of a sewage disposal plant in City; but a Committee has been appointed by Mysore Government "to investigat into the question of the final disposal of the sewage and consider other questions connected with the entire scheme of the City". We should therefore try to get Government of India's technical approval to our scheme before Mysore Government's proposals for the disposal of their sewage take definite shape. In the meanwhile, if considered necessary, Secretary might conveniently mention to the Chief Secretary about the scheme we have in view.

28.2.35

(From Para 88)

Secy.

93. As in para 92, the Govt course appears to be to draw the attention of the P.W.D. to the Mysore Govt's proposals. Our Engineer should be able, in informal discussion with the City authorities, to ascertain the possibility of a joint sewage disposal plant and area is not overlooked. Should talk to P.W.D. about this after the draft G.O.I. has issued.

I think so too. But you please act as proposed.

6/3/35

Secy.

2.3.35

D.No.1291. S.N. [illegible]

(1)

Please acknowledge receipt with thanks. I asked for these because I thought they might be useful to Govt. of India in considering our scheme as indicating the extent to which this system has been adopted by large cities and Corporations throughout the world. It is possible that the Govt. of India have not much information on this point.

Id. T.P.
5/2/35.

(2)

Draft submitted.

A copy of the catalogue will be sent to the Govt. of India when submitting the scheme for their technical sanction. (Fresh maps from E.E. awaited).

KNayar
6-2-35

Clow
7.2.35.

(L)

Issued: S.N. [illegible]

D.No.1555. S.N. 23[illegible]

(3)

I will deal with para 2 myself.

Id. C.G.N.E.,
13-2-35.

(4)

Para 1. The details furnished by Dr.Fowler may, if approved, be added to the enclosures to the letter to the Government of India forwarding the scheme. The Resident has ordered that a complete list of enclosures proposed to be sent to the Government of India should prepared and attached to the letter.

Such

Such a list will be prepared and submitted on receipt of the required maps from the Executive Engineer. He has been reminded.

14-2-35.

(From Jma 3)

Secretary.

16.2.35.

94 Please see my remarks in margin of para 93 of notes.

The draft may issue.

95 I think that the question of an honorarium to Mr. Garudachar should be considered now. See in this connection our letter to the Burdwan asking if we cd. have the use of his services.

6/3/35.

Issued:

S.N.25.

96 Submitted to Secretary for discussion with P.M.C. with reference to para 93 ante. (The question of honorarium to Mr.Garudachar will be examined and a note submitted on return of file).

19-3-35

Secretary.

97 Draft as put before Sir A Gotten for a d.o. letter to Mr. Hoe Dow. Issue my draft.

22.3.35.

S.N(26). Issue

98

Reference Resident's note at para (95) ante regarding grant of an honorarium to Mr.Garudachar.

99

×(R)

Correspondence with Mysore Government on the subject is at S.Ns. 19, 20× and 26 of file No.665 of 1931. It will be seen that Mr.Garudachar has expressed his desire to leave the matter of his remuneration entirely in the hands of the Hon'ble the Resident.

100

⊗Vide S.Ns.31+32 F665-31 (U)

We have carried on consultation⊗ direct with Mr.Garudachar for the most part: the Mysore Government are therefore not in a position to assess the volume and importance of the work done by him and they will not therefore be able to suggest what in their opinion would be a reasonable amount to be paid to him as remuneration.

101

S.Ns. 20+23 F665-31 (R)

Mr.Garudachar is the Sanitary Engineer to the Government of Mysore, has received training in America and has been spoken of very highly by the Mysore Government. His pay in Mysore Service is Rs.800/- per mensem.

102

The particulars furnished below would perhaps give some idea of the work done by Mr.Garudachar in connection with our Sewerage Scheme.

103

γS.Ns.25+26 F.665-31 (R)

At the instance of the Resident, he first saw Mr.Cooke and under his advice inspected, with Mr.Murphy, the General Bazaar area on the morning of the 24th October 1933 and submitted a report containing his views and criticisms of the scheme - S.N.27/A× of file 665 of 1931. A copy of P.M.C.'s letter dated 11th December 1933 (S.N.⊗33 of the same file) containing his own and Mr.Murphy's remarks on this report was then sent to Mr.Garudachar for study; and subsequently, on 16th December 1933, the Resident discussed the whole matter at the Residency with Messrs.Cooke, Murphy and Garudachar. As a result of this discussion,

× of (R)

⊗ of (U)

γ S.N.34 of (U)

—do—

Mr.

× Para 13 of S.N.36/A F465-21 (U).

Mr.Murphy prepared a further note on the Sewerage Scheme in consultation with Mr.Garudachar. A copy of this note was then sent to Mr.Garudachar for approval. His comments on this note are contained in his letter dated 24th December 1933 (S.N.39). Some time afterwards, i.e., in May 1934, we asked Mr.Garudachar to prepare and send us a self-contained report containing his views and criticisms of the scheme in a form suitable for submission to the Government of India. He discussed the matter with Secretary and submitted a detailed report in the form required - S.N.12 of file 428 of 1934.

104

It is difficult to assess properly the value of technical advice of this kind. The Office however ventures to suggest that a sum of about Rs.500/- appears to be a reasonable remuneration, taking into consideration the various factors such as the importance and cost of the Underground Sewerage Scheme, the qualifications and position of Mr.Garudachar, the importance of the advice rendered by him and the labour involved in it and also the promptness with which he did the work and submitted his reports.

105

Under Rule 64 of the Book of Financial Powers, the Hon'ble the Resident has power, in any individual case, not exceeding Rs.1,000/- to sanction non-recurring expenditure/on any object for which no scale or limit to his power of sanction is otherwise prescribed. Mr.Garudachar's honorarium may be sanctioned under this rule and the Commission may be directed to meet the expenditure out of the annual grant of Rs.50,000/- which the Government pay to the Municipality for sanitary purposes.

106

Before orders are passed, the President, Municipal Commission,

Commission, may, if approved, be consulted in the matter u/o.

(From para 98)

3.4.35.

Secretary.

107

Will P.W.C. please see from para 98 and give his views?

5-4-35.

The President, Municipal Commission, C & M Stn., B'lore

U.O. No. 428/34 Dated Bangalore 5th April 1935.

108

I do not think a fee of Rs.500/- is necessary. I consider that Rs.250/- is enough. However, I suggest that it might be left to Mr. Garudachar to send in a bill if he wishes to do so. We can then consider whether the amount claimed is reasonable or not.

27/4

President, Municipal Commission,
Civil & Military Station, Bangalore.

27/4/35

The Secretary to the Hon'ble the Resident in Mysore,
Bangalore.

NO.U.O. No. 2482/35 dated 27th April 1935.

Secy R 29/4

Core 29/4

OFFICE OF THE RESIDENT IN MYSORE.
BANGALORE.
29 APR. 1935
Regd. No. 4178
File No.

(109)

Please see from para (98) ante.

Two drafts are submitted for approval. The amount of the honorarium that may be decided on may kindly be entered in the drafts.

9.5.35.

Secretary.

110 I think Rs. 250/- should be quite adequate. The amount of work involved was not great.
The drafts may issue?

13.5.35.

111 Regd. Would Secy. please speak at his convenience.

13/5/35.

112 As desired by Regd., I consulted Chief Secy. Report Regd. about this. He made a few quiet personal enquiries and frankly told me that he thought that a sum of 250/- would be very suitable.

Awaiting 18.9.35

Issue. 4.6.35

113 Thanks for the reminder. S.N. (27-28): may issue.

D.No.10,778. S.N.(29).

114

M)

Please see S.Ns. 25 and 26. Before taking up the question with the Government of Mysore, we may, if approved, ask P.M.C. whether he or Mr.Murphy had discussed the matter with the City Municipal authorities, as suggested in S.N.26, and, if so, what the result was. Draft d.o. letter submitted.

16.11.35

Secretary.

115

This is the case about which Dr. Gilbert Fowler spoke to Resident a few days ago. It is for the Municipal Commission now to submit proposals for financing the scheme; for in the present stage of the Assigned Tract revenues a grant-in-aid is out of the question. The idea has always been that the Municipal Commission should finance the whole or a part of the scheme by means of a loan and that any grant which might be possible should be given from the accumulated surplus of the Assigned Tract revenues. But if the datum line is not revised there will soon be no accumulated surplus; and we are certainly not in a position to make any grant. The scheme is expected to pay its way; and if it can be shown that it should do so, it might very well be financed by a loan. At the present stage there is nothing for us to discuss with the Government of Mysore. Two revised drafts are for approval.

27-11-35

116 I asked Mr Murphy however would explain the scheme to me, as the maps are not with the case & they are in any event somewhat difficult to follow without local knowledge.

117 I understood from Mr Murphy that O/C discussions have taken place with the Mysore Govt, & that they are prepared in principle to consider a joint scheme.

.118 As regards finance, we are a little at cross-purposes. P. has made his proposals (for half-grant half-loan) in para 4 of his letter of 5.10.34 (Sec. 15) & except in regard to profit from the effluent, which is a matter for discussion with the Mysore Govt, it is difficult to see what further he can do at this stage. He also asked us (in para 10 of Sec. 15) to obtain the assent of the Banks to the scheme as outlined. I am not clear ~~what they~~ the discussions at the Meeting (paras 52-54 above) touched this point.

No. The discussion was only with Dr Fowler and Mr Kennedy-Cox.

119 D/S may issue, & on receipt of a reply to Appx II the Mysore case will probably be to initiate formal discussions with the Mysore Govt. It is not, I think, necessary to address the Mysore

Put at this stage.

120

The Surveyor also asked if 33A & B of the underground drainage scheme could be put in hand. Since from S.N.16 ante it was decided not to include provision for this in the 1935-36 Budget.

30/11/35

30/11/35

S.Ns. (30) & (31): Issue.

121

× cfps. 44 & 58 of (M)

Please see S.N.26 × and 31.

No reply has yet been received.

Draft reminder submitted.

4.8.36

(from para. 121)

Superintendent.

T.N.T. 4-8-36

5/8

1 2 F 1178-36

S.N. (30) Issue.

Draft 20/9/36

CORRESPONDENCE.

CONFIDENTIAL.

S.N.1

1

GOVERNMENT OF INDIA

EXPRESS D.O. LETTER

[*N.B.—This is an ORIGINAL MESSAGE, sent by post to save telegraphic expense and undue use of the wires, but intended to be treated, on receipt, with the same expedition as if it had been telegraphed. To save time and formalities it is worded and signed as if it had been so despatched.*]

FROM

Resident Mysore,

Bangalore.

To

Polindia,

New Delhi.

D.O. No. 125-T. Dated 30th December 1933.

Please refer to Mr. Narahari Rao's demi-official letter No. F. 228-A/32, dated the 14th November 1933, regarding the under-ground sewerage scheme for the main bazaar area of the Civil and Military Station, Bangalore, and my demi-official telegram No.11605, dated the 28th December 1933. This scheme has been further examined by the Mysore State's Sanitary Engineer referred to in my demi-official telegram dated the 27th October 1933. He is now satisfied that the scheme would be a success subject to certain modifications which can and will be adopted and provided that it is followed immediately by proper arrangements for the disposal of sewage. The Military authorities also agree to the scheme subject to the latter condition. It is not possible to guarantee satisfactory sewage disposal arrangements until complete scheme therefor, including method of financing it, has been placed before,

S. 6.

MGIPC—FP—12DCFMis.—(1743)—16-5-25—2,00,000.

before, and approved by, the Government of India. In the circumstances I do not now recommend provision being made for the extension of the underground sewerage scheme in the main bazaar area of the Civil and Military Station, in the budget for 1934-35. So far back as in June 1922 Mr. (now Sir William) Barton pointed out that sewage disposal arrangements were an integral part of this scheme and should be one of the first works to be carried out in pursuance of the scheme; vide his letter No.5350, dated the 30th June 1922. I am definitely of the same opinion. This part of the scheme assumes even greater importance and urgency in view of the contemplated retrocession of a portion of the Civil and Military Station and the formation of a Cantonment. Owing to the physical features of the Station, this sewage must flow along its present course which is roughly parallel to, and just inside, the Eastern boundary of the Civil and Military Station. And when the Cantonment is formed, land within that area and not far removed from the main sewage sewer and outfall which is now vacant will almost certainly be built upon. I am accordingly arranging for a complete sewage-disposal scheme to be drawn up; and I will forward it to the Government of India as soon as possible. It seems likely that such a scheme will be of a productive nature and that I shall recommend its being financed by a loan to the Municipal Commission of the Civil and Military Station.

At the same time I wish to make it quite clear that, from the considerable experience that we now have of underground sanitation in some of the poorest areas of the Station, there is no doubt that such a system is definitely practicable and successful in such areas. And there can be no question that, in the interests of the public health, it is desirable

that

that this system should be extended in those areas. I accordingly intend to recommend in due course that provision be made in the Assigned Tract budget for 1935-36 for carrying out sections A and B of the scheme. As, on retrocession, control over the main bazaar area will pass from us to the Darbar it is more than ever important that there should be satisfactory sanitary arrangements in that area which will be very close to the Cantonment. And if we continue to develop the scheme we can, with greater show of reason, require Darbar to carry it to completion.

o/c.

Lt.-Col.,
R E S I D E N T.

ASB
29.12

S.IV.2

1. 2

DEPARTMENT.

BRANCH. Confl.

File No.

Serial No.

Demi-official.

Draft Letter / Memorandum / Telegram

Class for telegrams: Ordinary / Express / Urgent* / Priority / Clear Line†

*Only for Foreign Telegrams.

†Not for Foreign Telegrams.

No. 16. Dated 1-1-1934 19

Rec: 1

To

G.H.Cooke, Esq., M.C., I.C.S.,
President, Municipal Commission, C & M Station, Bangalore

To be issued on | Issued on

1st Reminder

2nd Reminder

3rd Reminder

Heading :

Case or Diary No.

If post copy of telegram required

Date of despatch of above

List of enclosures

(Code word for telegrams.)

S.N. 1 auth
9/1 (M)

Put up for signature
(to be filled in)

Subject:- Bangalore Underground Sewage disposal scheme.

My dear Cooke,

I am desired to forward for your information a copy of Colonel Plowden's confidential demi-official express letter No. 125-T, dated the 30th Decr., 1933, to the Govt. of India, Foreign and Political Dept.

I am to request you will kindly send a carefully thought out and complete sewage disposal scheme with plans, estimates and map as early as possible. I am also to request that you will, when formulating your proposals, consult the Military

S. 5.
MGIPC—S1—207 (CPS) DOF—(M-260)—27-4-32—60,000 Pads

Military authorities, as it ~~xx~~ is absolutely necessary to consult them and their approval taken especially as regards location of sewage disposal works. It is also ~~xxxy~~ necessary to consult the Residency Surgeon in the matter. I am to say that when drawing up your proposals, you will doubtless not overlook Dr. Fowler's report dated the 29th March 1918, which formed an enclosure to Mr. Tasker's letter No. 965, dated the 4th August 1921.

Page 33 to 38 of this printed paper at S.W. 10/A in Coll: (B)

S.W. 6 (B)
6-2-97

Yours...Sincerely

29. 12. 31

Typed
31/12

File No. 407
1934.

Collection No.

Mysore Residency
Bangalore.

Pros. / Serial Nos. 1-23

SN/63 kept & rest Destroyed
N
13/6/48

Subject.

Cost of maintenance of lepers & lunatics of the Cantonment of Bangalore in the Asylums of the Mysore State.

Previous References.	Later References.
261/31 — Bills 261(1)/31 — Indirect charges	501/35

Office Memorandum
13/6/45

CORRESPONDENCE.

From - The Addl. Deputy Secretary to the Government of India
in the Foreign and Political Department,

To - The Hon'ble the Resident in Mysore.

OFFICE OF THE RESIDENT IN MYSORE.
BANGALORE.
7 NOV. 1933
Regd. No. 9707
File. No.

Memorandum No.D-3466-E/33.
Dated New Delhi, the 3rd Nov. 1933.

Payment of certain indirect charges to the Mysore Government in connection with the maintenance in their Asylums of lepers and lunatics of the Civil and Military Station, Bangalore.

Reference your letter No. 8092/261/1931, dated the 2nd September 1933.

2. The Government of India agree to your proposal that the indirect charges claimed by the Mysore Government, on account of the maintenance in the asylums of the Mysore State of lepers and lunatics from the Civil and Military Station, Bangalore may be paid to that Government with effect from the 1st April 1930. The additional cost involved should, as far as possible, be met from the budget provision of the Assigned Tract for the current financial year.

Addl. Deputy Secretary to the Government of India.

All Communications should be addressed to the Secretary to the Resident in Mysore, Bangalore, by designation and not by name.

No. 440

261/1931

FROM

Major G. Kirkbride, I.A.,

SECRETARY TO THE HON'BLE THE RESIDENT IN MYSORE.

To

The Chief Secretary to the Government of

His Highness the Maharaja of Mysore.

Dated, Bangalore, the 13th/15th January *193* 4

Subject.

Payment of certain indirect charges to the Mysore Government in connection with the maintenance in their Asylums of lepers and lunatics of the Civil and Military Station, Bangalore.

SIR,

I am directed to refer to the correspondence ending with your letter No. Pol. 53/Med. 40-30-31, dated the 14th/15th July 1933 on the subject mentioned above, and to say that the Government of India have agreed to the payment to the Mysore Government, with effect from the 1st April 1930, of the indirect charges claimed on account of the maintenance, in the asylums of the Mysore State, of lepers and lunatics from the Civil and Military Station, Bangalore. Necessary credit will be afforded to the Government of Mysore in due course.

S.N. 55

Vide S.N. 65

I have the honour to be,
Sir,
Your most obedient servant,

o/c.

Major,
SECRETARY TO THE RESIDENT.

Copy to the Accountant General, Madras, for information.

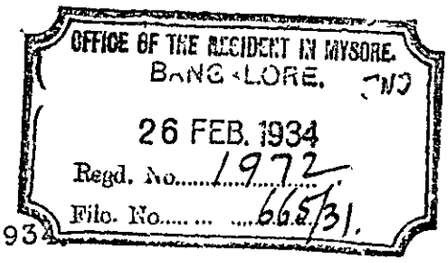
ASB/6.1.34.

P.W.3

13.

From - The Addl. Deputy Secretary to the Government of India in the Foreign and Political Department,

To The Hon'ble the Resident in Mysore.



Memorandum No. F.228-A/32.

Dated New Delhi, the 22nd February 1934.

Underground sewerage scheme of the general bazar area in the Civil and Military Station, Bangalore.

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The plans and estimates received with your letter No. 1011/665-1931, dated the 8th February 1933, are returned herewith.

P.W.N. 15

Addl. Deputy Secretary to the Government of India.

S.N-4

4

DEPARTMENT.

File No. 665/31

BRANCH.

Serial No.

Draft ~~Letter~~ Memorandum Telegram

Class for telegrams | Ordinary | Express | Urgent* | Priority | Clear Line† | *Only for Foreign Telegrams. †Not for Foreign Telegrams.

No. 1771 Dated 3/3/1934 19

with empte

To

The President, Municipal
Commission, Civil & Military
Station, Bangalore.

To be issued on | Issued on

1st Reminder

2nd Reminder

3rd Reminder

Heading :

Case or Diary No.

If post copy of telegram required

Date of despatch of above

List of enclosures

(Code word for telegrams.)

Subject.

Underground sewerage scheme of the general bazaar area in the Civil and Military Station, Bangalore.

The plans and estimates received with your letter No. 3020/31, dated the 1st February 1933 are returned herewith.

For Secretary to the -----
Resident.

T. N. Thangavelu
Mudaliar.
2-8-2-1934

28-2-34

S. N.
MGIPS—51—2nd (UPS) DGP—(E-26d)—27-4-32—50,000 Pads.

S.A.-5

5

D.O.No. 3/20

28-4-34

My dear MacIver,

S.N. 2 aute (M)

In January last we asked you to prepare and submit a detailed scheme for disposal of the sewage from the main Civil and Military Station sewer. This letter is not sent by way of reminder because it is fully realised that it will take you some time to work out the detailed scheme; but the Resident asked me to ascertain from you informally how the scheme was progressing. Perhaps you could let me know very briefly how it is going on.

Yours sincerely, o/c

Tone 28/4

To L.J. MacIver Esq., I.C.S.,
President, Municipal Commission,
Civil and Military Station, Bangalore.

S.N-6

16

D.O.No. 3247

THE MYSORE RESIDENCY,
Bangalore,
Dated, the 14th May 1934.

UNDERGROUND SEWERAGE SCHEME OF THE GENERAL BAZAAR AREA IN THE CIVIL AND MILITARY STATION OF BANGALORE.

Dear Mr Garudachar.

S.N-39 Coll: III (U)

Would you kindly refer to the correspondence ending with your demi-official letter to Major Kirkbride No. S.E. 1241, dated the 24th December 1933, regarding the sewerage scheme at Blackpally in the Civil and Military Station of Bangalore.

S.N-1 (M)

2. The Government of India have been informed that the scheme was examined by you and that you were satisfied that it would be a success subject to certain modifications which would be adopted, and provided that it was followed immediately by proper arrangements for the disposal of sewage. A complete sewage-disposal scheme is accordingly being drawn up; and as soon as it is ready the whole scheme will be submitted to the Government of India for their sanction.

3. As you will recollect, your reports in the first instance had to be prepared in a hurry and at short notice. They are contained in the several papers noted in the margin*, copies of which are enclosed. Now that it is proposed to submit a detailed scheme to

S.N-27/a (R)

S.N-36/a + 36/b Coll: III (U)

* 1. Your report dated 24th October 1933.
2. Paragraph 13 of letter No.9254/33, dated 11th December 1933 from the President, Municipal Commission, Civil and Military Station, Bangalore, to the Secretary to the Resident in Mysore and Mr. Murphy's note referred to therein.

S.N-37 Gen-III(U)

* 3. Major Kirkbride's demi-official letter to you No.11523, dated 21st December 1933.

S.N-39 Gen-III(U)

4. Your demi-official letter to Major Kirkbride No. S.E. 1241, dated 24th December 1933.

to the Government of India, Colonel Plowden considers it desirable to have a self-contained report from you containing your views and criticisms of the scheme. I am therefore to request you very kindly to let me have such a report in a form suitable for transmission to the Government of India. The matter is not very urgent now; but Colonel Plowden would like to have your report as early as may be convenient to you.

Yours sincerely

o/c.

3/5

B.R. Garudachar, Esq., B.A., C.E.,
M.I.M., & Cy.E., M.R.San.I.,
Sanitary Engineer,

Bureau of Sanitary Engineering, BANGALORE.

3/5

Report on the drainage scheme at Blackpally in the Civil and Military Station, Bangalore.

Under advice of Mr. G.H. Cooke, Collector, Civil and Military Station and President of the Commission, I inspected this morning with Mr. Murphy, Municipal Engineer the areas of the Civil and Military Station which have been provided with underground sewers and latrines with water carriage system and the area for which similar underground drainage is contemplated.

The general idea underlying the sewage scheme is quite sound. The discharge of the night soil from houses direct to the sewer with 4" stoneware pipe connection with a stoneware trap at the inlet side is a simple device and is quite suited to the locality of the poor people. The sanitary condition can only be effectively maintained if the flushing of the pans and the traps is done periodically by pouring sufficient quantity of water so as to drive the contents of to the sewer.

The parts of the ~~two~~ from where the above sewerage arrangement has been provided are decidely cleaner than places where hand conservancy system is still in vogue and the waste water from houses passes in open surface drains.

The underground sewers that have been laid so far in Blackpally are based on the calculation of water consumption of 8 gallons per capita per day. I consider this inadequate. The minimum water consumption that can be allowed for water carriage system may be at least 15 gallons per capita per day. Owing to inadequacy of water, the flush out latrines and the sewers are not acting as efficiently as they are expected to. When some man holes on street sewers were opened and examined, accumulation of solid matter was observed. This was washed away when some water was poured in the nearest latrine connected to the sewer. In some of the latrines which were also inspected, the faecal matter was still floating in the pan. This was however

flushed...

flushed out with a bucketful of water. This clearly shows the need fpr the education of the people further to recognise that efficiency of the flush arrangement depends on the adequate use of water.

The sewer flushing tank that is provided at the head of the sewer line has no water connection. I was given to understand that once a week or ten days water brought in carts is emptied into the tank for purposes of flushing. I am afraid this is rather a very unsatisfactory arrangement. Some of the flushing tanks I inspected showed that they had not been in use for quite a long time. A flushing tank with an automatic flushing syphon of Adams' design and with water connection to it, regulated to discharge automatically once in every 12 hours is desirable, especially as the house connections discharge very little water to the sewers.

While the type of flush latrines adopted in the Bazar area is a great advance over the dry system of conservancy, it cannot be recommended for better class localities where it is desirable and possible to introduce the standard type of flush latrines provided with cisterns, ventilating shafts etc. with an independent connection for sullage water.

The question of treatment of sewage also has to receive due consideration. When the sewerage scheme is extended, it will not be safe to run the sewage on the land in a crude form. Even as it is, the smell at the outfall is anything but pleasant.

Sd/- B.R. Garudachar,
Sanitary Engineer.

24th October 1933.

---

o/c.

Extract of paragraph 13 of letter No. 9254/33, dated the 11th December 1933, from the President, Municipal Commission, Civil and Military Station, Bangalore, to the Secretary to the Hon'ble the Resident in Mysore, Bangalore.

* * * *

13. With further reference to the report of Mr. Garudachar I enclose a further note by Mr. Murphy written in consultation with Mr. Garudachar, and which has Mr. Garudachar's full approval.

President.

In continuation of my remarks on Mr.Garudachar's report dated the 24th October 1933, I would like to add that, the use of more water by the inhabitants of the Bazaar areas is likely to increase considerably as, the Municipal Commission are now considering the question of allowing a liberal minimum free allowance of water per house whereas, hitherto, no minimum was allowed beyond the allowance of 80 gallons per head per rupee of rent per month and any consumption exceeding this allowance was charged for at 0-12-0 per 1,000 gallons, and again, previously no house assessed at a rental of less than Rs.100/- per annum was allowed a water connection but now, any house irrespective of rental value is given a water connection.

Owing to the excessive water charges as explained above the consumption of water not only in the Bazaar areas but in the Station generally has considerably decreased in spite of a full time supply.

As more than 50% of the houses in the Bazaar area are provided with water connections there should be no fear of a shortage of water for flushing purposes and those houses that have no water connections can easily obtain their requirements free from street stand posts conveniently situated in the neighbourhood where a plentiful supply is always available during the 24 hours; and, as pointed out before, although a

large

large quantity of water is unnecessary for the efficient working of the drainage scheme it must be said, it would be a considerable improvement to have a plentiful supply of it.

I have already mentioned in my previous remarks on Mr.Garudachar's report of 24th October 1933 that all the flushing tanks at heads of street sewers are to be supplied with water from connections to be made with the filtered water supply main where an unlimited quantity of a full time supply is always available.

As regards treatment of sewage when it becomes more concentrated after the whole of the Bazaar areas are connected the additional quantity that will enter the sewers from areas "A" and "B" proposed to be sewered during 1934 - 35 will be so small as not to affect the present condition of sanitation in the area under sewage irrigation. Sewage irrigation as now carried out between Old Madras Road and Domlur Road cannot be stopped without due notice being served on the cultivators concerned. The question of issuing a notice for complete stoppage of sewage irrigation will be taken up by the Commission early next year when notice can be served for complete stoppage of sewage irrigation in the Station limits and, nothing less than a year's notice would be necessary, so that, the plant for treatment of sewage could be installed during the year 1935-36. It would however be desirable to order the plant about the middle of the year 1934-35 in order to be able to instal it by the end of 1935 so that it may come into operation before the hot weather of 1936.

Sd/- W.H. Murphy,
19-12-33.
Executive Engineer.

"C o p y"

c/c

Superintendent, Resident's Office,
Bangalore.

ASB

S.N-7

17

D.O.No.3282

THE MYSORE RESIDENCY,
Bangalore,

Dated the 5th May 1 9 3 4.

UNDERGROUND SEWERAGE SCHEME OF THE GENERAL BAZAAR AREA IN THE CIVIL AND MILITARY STATION OF BANGALORE.

S.N.6.

Dear Mr. Garudachar

In continuation of my demi-official letter No.3247 dated 4th May 1934, I write to enquire whether you could make it convenient to come and see me any morning next week about the question of your report on the sewage extension scheme. I was discussing it with the Resident yesterday; and there are one or two points about it which I should very much like to explain to you verbally.

Any day next week between 10.30 a.m. and 1 p.m. would suit me well. I shall be in my room in the Resident Office.

Yours sincerely

o/c

5/5

B.R. Garudachar, Esq., B.A., C.E.,
M.I.M., & Cy.E., M.R.San.I.,
Sanitary Engineer,

Bureau of Sanitary Engineering, BANGALORE.

5-5-34

BANGALORE C & M STATION MUNICIPALITY

Office Hours:—
11 A.M. to 5 P.M.

Telephone No. 55.

S.N.8

D.O. No. 9254/33

Mayo Hall,

3rd May 1934.

18

OFFICE OF THE RESIDENT IN MYSORE, BANGALORE.
5 MAY 1934
Regd. 4326
File No.

S.N.5

My dear Edwards,

Reference:-Your D. O. No.3120, dated the 28th April 1934, regarding the disposal of sewage, Civil and Military Station, Bangalore.

Dr. Fowler's report furnishing particulars of the approximate cost of installing a plant for the disposal of sewage, is not yet ready. Murphy saw him and discussed the matter on the 1st and 2nd instant. The plans, specifications, etc., necessary for the scheme have been completed, and Murphy thinks that Dr. Fowler will be in a position to furnish a detailed report in about three weeks' time. Murphy will require at least a week's time to draw up his report.

So I expect that I may be able to despatch to the Residency a complete report on the scheme early next month.

Yours sincerely

To,

Major C. G. N. Edwards, I.A.,
Secretary to the Hon'ble the
Resident in Mysore,
The Residency,
BANGALORE.

S.N.9

Sewage Disposal

Bangalore "Daily Post". 4th May 1934.

Another subject upon which we have something to say—although we cannot supply all the information asked for by Mr. Wheeler—concerns underground drainage and yet a third the burning question of faulty meters. Taking the latter first, we are in a position to state upon excellent authority that it is recognised that matters cannot be permitted to remain as they are and that a close inspection of all meters has been ordered which may be expected to produce good results. As for the underground drainage scheme, this question was first mooted in the time of Mr. Barton (Sir William Barton, as he now is) as Resident and when Mr. Tasker was Municipal President. We learn on excellent authority that it was then decided that, the scheme should be put in hand piecemeal, Sir William Barton himself laying stress on the point that a comparatively small portion of the Station should be experimented on and, *if* it proved a success, the work should be further extended. Further, we learn that Sir William made a particular point of provision being first made for the final outflow and disposal of the sewage when collected underground.

That, of course, has not yet been done, and we have the best reasons for saying that it is recognised that the present system of a flow through an open drain with disposal in a local tank is not merely inadequate but highly objectionable, and that the next step taken will concern the improved disposal of the sewage. Estimates for this, in fact, are already being prepared, and although we are not in a position to give details, we understand that further work on the whole scheme is conditional upon the plans for final disposal being wholly satisfactory: This, it will be admitted puts a somewhat different complexion on the state of affairs and we would recommend ratepayers, for the present, at least, to possess their souls in patience and leave the matter in the hands of the authorities, comforted by the knowledge that all points of the scheme are under close consideration and that nothing more will be done in a hurry.

S.E.N.10

GOVERNMENT OF MYSORE

DEPARTMENT OF HEALTH

J. V. KARVE, M.B., Ch.B., D.P.H.,
Director of Health.

BUREAU OF SANITARY ENGINEERING

~~M.N. MEHDAZIS, B.Sc.(Eng.), M.I.S.C.E.,~~
Sanitary Engineer.

B. R. GARUDACHAR, B.A., C.E., M.I.M. & Cy.E., M.R. San. I.,
Executive Sanitary Engineer.

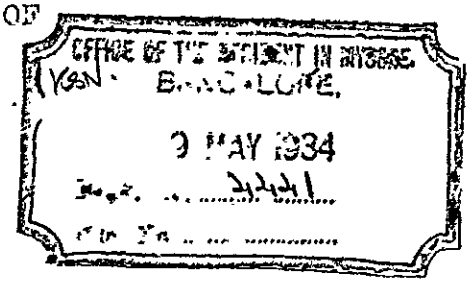
D. O. No. S. E. 2747

"GRACE VILLE" PALACE ROAD,

Encl.

Bangalore, (S. India), dated..... May..... 8.....193 4.

UNDER GROUND SEWAGE SCHEME OF
THE GENERAL BAZAAR AREA IN THE
CIVIL AND MILITARY STATION OF
BANGALORE.



Dear Sir,

With reference to your D.O. No. 3292 dated 5th May 1934 Sanitary Engineer's enquiring whether it would be convenient for me to go to the Office informed over the phone. Will Resident-Office be in Residency and see you about the question of my report on the sewage extension scheme, I write to inform you that I shall see you on Thursday the 10th May 1934 at 12 - 30 P.M.. not in the Residency.

9-5-34

Yours Sincerely,

B. R. Garudachar

Invited to come to file.
on my table at 10 am on
Thursday 10th 9/5

Major C.G.N.Edwards,
Secretary to the Resident,
Residency Park,
BANGALORE.

S.W.11

File 665/31.

DEMI-OFFICIAL.

No.3435-Ed Dated 11th May 1934.

From

The Secretary to the Resident.

To

B.R.Garudachar, Esq., B.A., C.E.,
M.I.M. & Cy.E., M.R.San.I.,
Sanitary Engineer, Bureau of
Sanitary Engineering, Bangalore

UNDERGROUND SEWERAGE SCHEME OF THE GENERAL BAZAAR AREA IN THE CIVIL AND MILITARY STATION OF BANGALORE.

.....

My dear Mr Garudachar

With reference to our conversation of 10th May, ~~this morning~~, I am sending you for reference and return in due course the printed collection containing Mr.Madeley's report and other papers relating to the Bangalore Sewerage Scheme.

Yours sincerely

S.W.10/a (L)

10/5/34.

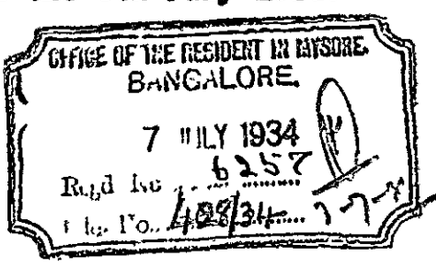
F.428/34.

S.N.12

12

S.E.1327.

Office of the Sanitary Engineer to the
Government of Mysore,
Bangalore, dated the 6th July 1934.



Dear Sir:

With reference to your D.O. letter No. 3247 dated 4th May 1934 asking for a detailed report on the sewerage scheme for Bangalore and your D.O. letter No. 3435 dated 11th May 1934 enclosing the printed collection containing Mr. Medeley's report and other papers relating to the Bangalore sewerage scheme, I herein enclose my report on the sewerage scheme of Bangalore and also return the printed collection.

Yours sincerely,

B.R. Gowdaiah

Major C.J.N. Edwards,
Secretary to the Hon'ble
the Resident in Mysore,
BANGALORE.

BRG:MK.

Office of the Sanitary Engineer to the
Government of Mysore,
Bangalore, dated the 6th July 1934.

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With reference to your D.O. letter No. 3247
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Yours sincerely,

Major C.J.W. Edwards,
Secretary to the Hon'ble
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BANGALORE.

BRG:NK.

Report of Mr. B.R. Garudachar on the sewerage scheme for Bangalore.

GENERAL.

The scheme as prepared by Mr. Murphy is quite sound in general. The discharge of night soil from houses direct to the sewer with 4" stoneware pipe connection with a stoneware trap at the inlet side is a simple device and is quite suited to the poor locality. The bathing and washing places of every house are proposed to be connected with the latrine seat by means of a shallow open channel which will drain into the gully trap.

The parts of the town where the sewage treatment has been provided are decidedly cleaner than the places where the hand conservancy is still in vogue. The hand conservancy system is so inconvenient that the sooner it is done away with, the better it will be. In the dry conservancy system, the matter is collected and removed in pails and is often attended with risk and nuisance whereas the water carriage system is highly sanitary and removes household wastes immediately and economically to the point of disposal. It is the most satisfactory system in use at the present time and where it is practicable, should be used in preference to the dry system or cess pools. Further with the education of the scavenger classes that is going on briskly, there will be dearth of scavengers. So it is absolutely necessary to devise a system which may go on without the help of human agency.

Mr. Murphy in his report has recommended a combination of surface drains with a separate system of sewers in the bazaar area. I am of opinion that this will not be a very satisfactory arrangement as these open drains will be a source for insanitation. I would therefore strongly

Report of Mr. S.R. Garudachar on the sewerage scheme for Bangalore.

GENERAL.

The scheme as prepared by Mr. Murphy is quite sound in general. The discharge of night soil from houses direct to the sewer with 4" stoneware pipe connection with a stoneware trap at the inlet side is a simple device and is quite suited to the poor locality. The bathing and washing places of every house are proposed to be connected with the latrine seat by means of a shallow open channel which will drain into the gully trap.

The parts of the town where the sewage treatment has been provided are decidedly cleaner than the places where the hand conservancy is still in vogue. The hand conservancy system is so inconvenient that the sooner it is done away with, the better it will be. In the dry conservancy system, the matter is collected and removed in pails and is often attended with risk and nuisance whereas the water carriage system is highly sanitary and removes household wastes immediately and economically to the point of disposal. It is the most satisfactory system in use at the present time and where it is practicable, should be used in preference to the dry system or cess pools. Further with the education of the scavenger classes that is going on briskly, there will be dearth of scavengers. So it is absolutely necessary to devise a system which may go on without the help of human agency.

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recommend that in all places wherever sewers are laid, both the sewage and sullage may be taken to the sewers by pipes. Mr. Medeley, in his report, has also pointed out the desirability of this course.

SEWERS.

It is always usual to so design the main structures that they will be capable of serving the community adequately when its development and population shall equal those estimated for a time of some years or decades after the completion and the beginning of operation of the works. The number of years from the date of design to the estimated date when the conditions of design will be reached is the period of design sometimes called the economic period of design.

Laterals and submain sewers are usually designed to serve the tributary areas when completely developed or for conditions estimated to be reached far in the future as the slight additional cost for increasing the size of small pipes is usually immaterial compared to the total cost of the work. Large sewers, pumping stations and treatment works are usually designed for a comparatively short period of time, since these structures can generally be relieved or supplemented by parallel sewers or additional units. Many conditions may influence the growth of a community and estimates of future requirements are attended with some uncertainty.

In Madras the sewers have been designed to carry off in six hours half the whole daily quantity of sewage of anticipated population in 1960 plus an allowance for rainfall equal to half of the maximum flow, the sewers to run half full and the gravitation mains three quarters full when carrying the flow. The mere conveying capacity of the pipe

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sewers are five times the estimated sewage dry weather flow in 1960, the gravitation mains 3½ times the dry weather flow. The dry weather flow for sewers is taken at 25 gallons per head per day on the anticipated population of 1960.

In the report of Mr. Murphy, it is said that for Bangalore the main sewers have been calculated to discharge ¾ of the daily quantity for A class houses in 6 hours and for B and C class houses in 4 hours when flowing three fourths full and the branch sewers the same quantity in the same time flowing half full. He further says that a very liberal allowance of sewage per head of population has been made for calculating the sizes of sewers and chances of failure on this score have been reduced to a minimum if not entirely eliminated. The assumptions regarding the number of houses per acre and the number of people per house may no doubt be accepted, but the provision of 12 gallons per capita per day in the third item of the A class and of 8 gallons per capita per day in B and C class is no doubt very low. With the education of the people and with the facilities that are likely to be given by the Municipalities there will be a tendency for the people to use more water atleast double the quantity that is being given now. I would therefore suggest that in designing the submains and street sewers, a provision of 15 gallons per capita per day may be made.

Mr. Medeley, Special Engineer of the Corporation of Madras in his report on the sewerage scheme for Bangalore in the year 1921 has laid stress on this point. He has said that the amount of sewage to be dealt with per head of population should be considered with regard to the future water supply and that it cannot be doubted that Bangalore will not continue to be satisfied with this quantity which atleast will be doubled in the future.

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In calculating the sewers, Mr. Murphy has not taken into consideration the rain water that falls in the court-yard of houses, as there is no special arrangement for separating this from the water that gets into the sewers. His argument is that the maximum flow of sewage is usually in the mornings when it scarcely rains and that the flow in the evenings is very little. So even if the rain water gets into the sewers, there may not be any additional quantity entering and there is no necessity for making any allowance. I quite agree with him in this.

The sewer flushing tank that is provided at the head of the sewer line has no water connection at present. I was given to understand that water was brought in carts and emptied into the tank for purposes of flushing. This is not a very satisfactory arrangement. Flushing tanks with automatic flushing siphons which regulate discharge automatically once in 12 hours are desirable especially as house connections discharge very little water to the sewers.

Though the type of flushing latrines that have been recommended in the bazaar area may be considered as a great advance over the dry system of conservancy, it cannot be recommended for better class localities where it is desirable and possible to introduce a standard type of flushing latrine provided with cisterns, ventilating shafts etc. with an independent connection for sullage water.

SEWAGE DISPOSAL.

Mr. Murphy gave me to understand that Dr. Fowler has been (interested) with the work of preparing a scheme for the sewage disposal and that it will be an activated sludge plant of diffused air aeration. This is no doubt the modern way of treatment and is being used on a large scale in western countries.

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Ultimately there will be the necessity of bringing the sewage from the city proper, that is, from the Sunkal Farm to treatment at this place. The plant is therefore to be designed so as to admit of future expansion. Mr. Murphy assures me that this aspect of the problem is also being considered. In the letter of Mr. Murphy, it is pointed out that the area that will be taken up in the next year for sewerage will be very small, that it may not increase the quantity of sewage considerably and that the present system of disposal might be allowed to continue without any serious risk. Though this view may be accepted to some extent, it is still felt that the sewage that is coming now and that is treated on land in a crude form is already causing great nuisance as the smell that is emanating at this place is anything but pleasant.

CONCLUSION.

In summing up my remarks, I wish to point out

1. That in calculating the size of pipes, consideration may be had of the increased consumption of water.

2. That it is necessary that proper arrangements are made for flushing the sewers periodically.

3. That necessary measures must be taken early to arrange for the installation of proper sewage disposal works.

B. R. Gowardhan 5.2.34

SANITARY ENGINEER.

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SANITARY ENGINEER.

Enclosure II 120

13—2,000—5—4—1934.

No. 9254/33 CIVIL AND MILITARY STATION, BANGALORE

MUNICIPAL OFFICE.

DATED 5 October 1934.

From

L. J. MAC IVER, ESQ., I.C.S.,

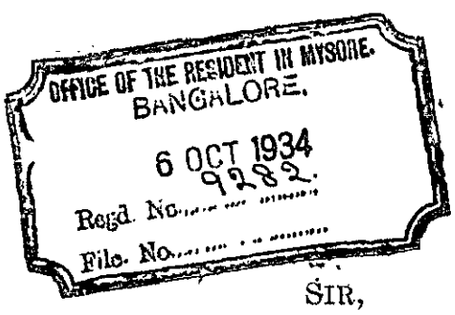
President, Municipal Commission,

Civil and Military station, BANGALORE.

To

The Secretary to the Hon'ble the Resident in Mysore,

Bangalore.



SIR,

Bangalore Sewage Disposal Scheme.

In accordance with instructions conveyed in your Confidential D. O. letter No.16 dated the 1st January 1934, I have the honour to submit, herewith, the following papers together with preliminary proposals for the Sewage Disposal Scheme:-

(1) Tender submitted by Messrs. Glenfield & Kennedy on behalf of Messrs. Activated Sludge Ltd.

(2) Copy of the Executive Engineer's report on the scheme, together with rough estimate and map.

(3) Copy of proceedings at informal meeting with the Military authorities and Residency Surgeon held on the 14th September 1934.

2. Messrs. Activated Sludge Ltd., represent what I understand now holds the field as the most advanced and up-to-date method of sewage disposal. They have completed large schemes of the kind in Great Britain and America in comparison with which the scheme under consideration is a small one. In India there are altogether nine Activated Sludge plants in actual and satisfactory operation, as set forth in the statement below:-

ACTIVATED SLUDGE PLANTS IN INDIA.

Place.	Population (Approx.)	Date when put in operation.
Jamshedpur.	6 - 8,000	1921.
Indian Institute of Science, Bangalore.	400	1922.

P. T. O.

21

Place.	Population (Approx.)	Date when put in operation.
Sibpur Engineering College, Calcutta.	300	1926.
Madura Mills, Tuticorin.	3,000	1928.
Empress Mills Model Village, Nagpur.	2,000	1930.
Agricultural College, Coimbatore.	1,500	1930.
Madura Mills, Ambasamudram.	8,000	1932.
Ishapore Rifle Factory, (Extension).	2,000	Construction just completed, April 1934.
Bhatpara Municipality.	(Sludge Re-activation).	Construction just completed, April 1934.

The firm are also at present in touch with some of the leading cities in India such as Madras, Nagpur and Poona, with a view to the introduction of their process. I understand that the Government of Bombay have only recently accepted their proposals for disposal of sewage for a large part of the City of Poona. Although their process is not as yet in general use throughout India, it has passed beyond the experimental stage and there can, I think, be no question as regards the reliability of the firm and the success of their schemes already in operation throughout the world. If we adopt their scheme we shall have the additional advantage of having their Eastern representative Dr. Fowler on the spot. He will be in a position to superintend personally the installation of the plant and supervise its working in its initial stages. This is an advantage which I think should weigh strongly in deciding on the acceptance of their scheme.

3. It will be seen from the report of the Executive Engineer that, though he has no practical knowledge of the Activated Sludge method of sewage disposal (as indeed very few people in India possess) he is of opinion that their proposals should meet our requirements. The Residency Surgeon and Municipal Health Officer

are

(22)

are of the same opinion. The scheme is designed for the present to deal only with the sewage from the central and northern parts of the Civil and Military Station or a population of 85,000 people, as shown in the accompanying map. It, however, possesses the essential requirement that it can from its location and design be readily adapted to deal with the sewage outfall from the remaining parts of the Station as well as from the City if desired. This is a highly important consideration. It is I consider essential that any sewage disposal scheme should be designed to deal in time not only with the whole Station but also with the City outfalls in the event of retrocession. On this aspect of the scheme it would I think be advisable to secure the assent of the Durbar to these preliminary proposals.

4. It will be seen that according to the present preliminary estimates the completed works are estimated to cost Rs. 3,32,000/-. Of this amount a sum of roughly Rs. 30,000/- is to be expended on covering the main sewer. This part of the scheme, as it is more in the nature of underground drainage and not an essential part of the process of sewage disposal might well I think be financed by a grant, leaving (roughly) 3 lakhs to be financed by other means. In his letter No. 125-T, dated the 30th December 1933, to the Government of India, Foreign and Political Department, the Resident indicated that he would probably advocate the financing of the scheme by a loan. It is for consideration whether the whole scheme need be so financed, or whether if funds permit, it might not be preferable to have it placed on a half loan-half grant basis, which is I understand a common method of financing public utility schemes elsewhere in India. The fact that the scheme is being undertaken to a large extent, on account of objections to the existing arrangements by the military, who are contributing nothing towards it forms an additional reason for the Scheme being financed partly by means of a grant.

S. E. 1 (19)

5. As the scheme is to be financed either in whole or in part by a loan it is essential that it should be of a remunerative nature. This aspect of the matter is dealt with in para 4 of the Executive Engineer's report. It is expected that compost of high manurial value will be obtained by the mixture of the purified sludge with street and house refuse, for which a ready

P.T.O.

23)

demand exists both in the vicinity of Bangalore and the adjacent sugar-cane districts. I have accordingly worked out a rough estimate as below, on a conservative basis, which shows a profit of Rs.36,500/- per annum on the sale of compost. Dr. Fowler considers that these estimates are on the low side:-

Quantity of refuse collected daily in the Civil and Military Station at present is 125 carts, for safety -say- 100 carts.

The approximate weight of refuse per cart is ½ ton.

One ton of refuse makes ¼ ton of compost.

Quantity of compost to be produced daily is 25 tons.

Price obtained for compost at site of works in Mysore is Rs.4/- per ton.

Rs.4/- per ton is therefore assumed for the compost at site of works at Domlur.

Value of compost produced per day will be Rs.100/- or Rs.36,500/- per annum.

6. To begin with the effluent to be obtained from the disposal works will not be a source of profit, as this will be run into Chellaghatta Tank but the probability of further profit from this source in the future should not be ignored. It may be possible to arrange with the Durbar for some return from this source. It averages 800,000 gallons per day. A fair value may be taken as Rs.25/- per day @ half an anna per 1,000 gallons or Rs.9,125/- per annum.

7. I have also estimated the cost of working the plant as below showing an expenditure of Rs.21,765/- per annum:

1.	1 Chemist @ Rs.250/- per month.	Rs.250/-
2.	1 Mechanic @ Rs.200/- -do-	" 200/-
3.	1 Assistant Mechanic @ Rs.75/- per month.	" 75/-
	C. O.	Rs.525/-

24

	B.F.	Rs.525/-
4. 1 Maistry @ Rs.30/- per month.	"	30/-
5. 10 Coolies @ Rs.15/- -do-	"	150/-
6. 4 Sweepers @ Rs.12/- -do-	"	48/-
7. Cost of current -do-	"	960/-
8. Repairs say	"	100/-
Total.		1,813/- P.M.

or Rs.21,756/- per annum.

Dr. Fowler considers that these estimates are entirely adequate, and in respect of power on the liberal side.

8. The net profit per annum excluding consideration of any return from the effluent referred to in para 6 thus works out at Rs.14,744/-. As it is not known how the scheme will eventually be financed, I am unable to make any estimate of interest and sinking fund charges. But if these are estimated at 8% on a loan for the complete works of 3 lakhs, or Rs.24,000/- the above figures show a net loss on the scheme of Rs.9,256/- per annum.

9. At an informal meeting with the Military authorities at which the A. D. M. S. and the C. R. E., were represented: (vide note of proceedings attached) their assent was readily obtained to the acceptance of the scheme. The objection entered by the A. D. M. S., to the rubbish carts (or lorries) passing in proximity to the hospital is not an essential one, as other means, such as realignment of the road, can be devised to deal with this objection.

10. I would propose, therefore, that the tender of Messrs. Activated Sludge Ltd., be forwarded to the Government of India with a view to their acceptance of the scheme in principle. It would, I think, be advisable before doing so, to obtain the assent of the Durbar to the scheme as outlined. As soon as the acceptance of the Government of India is obtained, detailed plans and estimates will be prepared and submitted for the works

P.T.O.

25)

for which lump sum provision has been made in the rough estimate.

11. The Resident would perhaps wish first to discuss the scheme with Dr. Fowler who will be pleased to do so at any time.

I have the honour to be,
Sir,
Your most obedient servant,

President, M.C.

MVL.
4-10-34.

Enclosure II (?)

NOTE BY THE EXECUTIVE ENGINEER ON SEWAGE DISPOSAL SCHEME.

---:0:---

President.

In submitting herewith plans, specifications and estimates for a sewage disposal scheme for Bangalore, I would like to make it clear that I have had no practical experience of sewage disposal schemes of any description and have no knowledge of the subject, and am therefore unable to offer any useful advice on the plans and proposals submitted by Messrs. Activated Sludge Ltd. I have, however, discussed the subject at great length with Dr.Gilbert Fowler, who represents Messrs. Activated Sludge Ltd., in India, and, from what I have been able to gather, I think that the suggestions put forward by Messrs. Activated Sludge Ltd., will excellently suit our requirements provided the plant does all it is said to do, for the following reasons:-

In purifying sewage a valuable sludge is obtained which will command a ready market in Bangalore and the out-lying sugar-cane growing districts. The sludge can either be dried and sold in powder form or used for making compost.

Of late years, both the City and Civil and Military Station Municipalities have had considerable trouble in disposing of house and street refuse and the problem of its disposal has greatly agitated the minds of the Municipal authorities, so that any sewage disposal scheme, whereby refuse can be utilized and innocuously and economically dealt with, should go a long way in solving the refuse disposal problem.

Compost of very high manurial value is formed by adding sludge obtained from the purification of sewage by the Activated Sludge system, to street and house refuse and the demand for this manure should be very great indeed both in Bangalore and the outlying sugar-cane districts. At present, all house refuse and most of the night soil is used for manuring fields just outside Municipal limits, and crude sewage drawn directly from the main sewer is used for irrigating vegetable gardens both in the City and Civil and Military Station, and when the sewage disposal plant

is

is installed, there will be no more night soil or house refuse available for manuring these fields or gardens so that cultivators will necessarily be compelled to buy their manure from the disposal works. And, further, the effluent obtained from the disposal works containing a fair amount of nitrogen, can be used for irrigating sugar-cane fields situated below the sewage outfall.

It is proposed to locate the works on the agricultural land to the south of Domlur Road and north-west of Chelgatta Tank, as indicated in red on the accompanying map of the Station. The prevailing winds, which are south-west and north-east, blowing over this site, will blow clear of all residential buildings and will not cause a nuisance to any residential area.

The sewage disposal works as now designed, will only deal with a population of 85,000 people and will take the sewage from the central and northern parts of the Station, or the portion to the north and ~~exit~~ east of the green line shown in the accompanying map.

The actual area to be occupied by the plant is one acre, but it is proposed to acquire 10 acres of land in order to provide ample space for collection and treatment of house refuse for making compost, and further extension of works to deal with sewage from the rest of the town and City limits, if necessary, when the plant would have to be more than duplicated. The location of disposal works on one site for the whole Station and City limits will result in a considerable saving in running costs.

The accompanying map of the Station shows in different colours, the other lines of main sewers and outfalls, and the outfall of the greater portion of Bangalore City is in Sunkal Farm, which lies to the south of the Civil and Military Station, between Koramangala Tank and the Lalbagh and coloured in pink on the accompanying map.

Before sewage from the City and the southern and south-eastern parts of the Civil and Military Station can be treated at

Domlur, a pipe sewer will be laid from Sunkal Farm parallel with the present main drain to a point to the north-east of Koramangala Tank, and the outfalls of the Richmond Town and Shoolay and Austin Town sewers will be connected up with it. It will discharge into a sump or well from which it will be pumped through a pipe line laid across Agram Plain into the sewage disposal works near Domlur Road. At present, the City Sewage is used for irrigating land in Sunkal Farm and the Richmond Town sewer discharges into a well near Puduparacherry, from which it is drawn off for irrigating garden land. The Shoolay and Austin Town sewers discharge into a sump near the Military Slaughter House, from which it is pumped up to the Military Grass Farm situated to the north of the Slaughter House.

As clearly explained in my report on the Drainage Scheme for Bangalore, the sewage from the General Bazaar, Ulsoor and the ~~xxxx~~ north of the Station is used for irrigating garden lands on both sides of the sewers between Old Madras Road and Domlur Road and during rain storms, the sewage mixed with rain water flows into Chelghatta Tank.

From a point 400 feet to the east of Old Madras Road to Chelghatta Tank, the sewer is open and is of brick masonry lime and cement plastered inside. It is proposed to completely cover it with stone slabs up to the inlet of the disposal works and to stop all irrigation from it.

The site for locating the sewage disposal plant was selected for four reasons, viz:-

1. Its close proximity to the outfall of the main sewer.
2. Its situation on the boundary line between the Civil and Military Station and Mysore State limits.
3. Its adaptibility and convenience for further extension for taking sewage from the City and southern parts of the Civil and Military Station, and
4. The prevailing winds, which are North-east and South-west, will not carry offensive odours from the disposal works to the residential parts of the Station, but will blow clear of them.

Messrs. Activated Sludge Ltd., in their proposals and tender have clearly and exactly explained how the scheme is to be worked and the cost of their part of the work and what it covers is also

stated.

stated. A rough estimate has been prepared of the cost of constructing necessary tanks and channels, etc., as indicated in the blue print plan submitted by Messrs. Activated Sludge Ltd., and lump sum provision is made for constructing a pump house and acquisition of land. The cost of covering and thoroughly repairing the main sewer from the end of the covered portion near Old Madras Road to the outfall is also given as a lump sum, but is based on the cost per running foot of sewer, which is 9,240 running feet. As the proposed site is on low lying ground and is likely to be submerged during period of heavy fainfall, provision has been made for protecting the tank from floods and also for forming roads and drains to the works from Domlur Road.

If the scheme, as now put up, is accepted in principle by the Government of India, detail plans and estimates can be submitted for works for which lump sum provision has been made in the rough estimate and the plant can be ordered meanwhile.

The complete works are estimated to cost Rs.3,32,000/-, for which a Government Grant or a loan will have to be obtained, as Municipal funds are not available for this purpose.

Sd. W. H. Murphy,
Executive Engineer.

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"C O P Y"

T. N. Thangavelu Mudaliar.

SUPERINTENDENT, RESIDENT'S OFFICE.

BJ

Estimate—Detailed Measurement Sheet—*Continued.*

Hoe[illegible]o., Madras.—25-4-34

Details of Work.	Number.	Measurement in feet. L.	B.	D.	Area or Contents.	Total quantity of each description of work.
Name of Work - Constructing a reinforced cement concrete activated sludge plant for the Civil and Military Station for the disposal of sewage.						
1. Reinforced Cement Concrete work for grit channel floor	1	120	15	1	1800	
- do -	1	120	7	1	840	
- do -	1	120	2½	1	300	
Outer walling - 4 sides.	1	262	14	4" + 8" / 2	1834	
Wall over above - 3 sides.	1	142	3	3" av.	107	
Wall all round 4 sides.	1	254	14	6"	1778	
Cross ends of above.	2	12	3	3"	18	
Extra bits.	2	2½	3	3"	4	
Cross walls of both channels.	6	110	14	4"	3080	
				Total.	8761	
Mixing Channel. - floor.	1	120	8	1	960	
Walls all round.	1	256	14	av. 6"	1792	
Extra heights for cross bits.	2	6	3	3"	9	
Cross Walls.	3	6	14	4"	84	
				Total.	2845	
Areation and reactivation Channels.						
Floor.	1	120	90	1	10800	
	2	25	4	4"	67	
Outer Cross Walls.	2	90	14	½	1260	
Wall over it.	2	90	3	3"	135	
Interior Cross Walls.	13	90	14	3"	4095	
	5	120	14	3"	2100	
Walls of sludge floor channel.	4	25	5	3"	125	
Cross walls of sludge return air lift.	4	12	12	4"	192	
Floor of air lift.	2	9	4	4"	24	
Walls -do-	2	12	6	av. 6"	72	
				Total.	18870	
Mixed Liquor Channels - M.3 & 5						
Floor all round.	1	460	7	1	3220	
Walls.	2	460	14	av. 6"	6440	
Extra height over outer walls.	2	90	3	3"	135	
				Total.	9795	
Settlement Tanks.						
Area of one tank.						
bottom.	½ x 4	28	28	6"	784	
Walls - 3 sides.	3	28	5	4"	140	
Sunk Channel.	4	28	3	3"	84	
Effluent channel wall.	1	28	8	3"	56	
				Total.	1064	
Area of 12 tanks = 1064 x 12 =					12768	
Grand Total:-					54039 or 54,100.	
2. Earthwork - Excavation.						
Throughout for the plant (to be paid as per actuals).						1 item.

[redacted]D. V-13—3,000—14-2-34 (6).

E. No. 31—Inner.

ESTIMATE FORM—Abstract.

Item number. (1)	Quantity. (2)	Description of work. (3)	Rate. (4)	Per (5)	Amount. (6)	Total. (7)
			RS.		RS.	RS.
		Reinforced Cement Concrete.				
1	54100	Work for sewage disposal plant.	1/14	Each	1,01,438.	
2	1 item	Earthwork Excavation.				
		(To be paid as per actuals:	3500/-	L.S.	3,500	
				Total.	1,04,938	
				Contingencies:-	5,247	
				Total.	1,10,185	
				or	Rs. 1,10,000/-	

Sd. W. H. Murphy,
Executive Engineer.

P[illegible]D. V-13—3,000—14-2-34 (6).

E. No. 31—Inner.

ESTIMATE FORM—Abstract.

Item number. (1)	Quantity. (2)	Description of work. (3)	Rate. (4)	Per (5)	Amount. (6)	Total. (7)
			RS.		RS.	RS.
		CEMENT ABSTRACT.				
1.		Estimate and tender for Activated Sludge Plant - as per details.	..			1,68,000/-
2.		Estimate for tanks and channels, as per details.	..			1,10,000/-
3.		Pump House - Lump Sum.	..			5,000/-
4.		Acquisition of land - Lump sum.	..			10,000/-
5.		Repairing and covering main sewer - Lump sum.				30,000/-
6.		Special protective work for excluding storm water from disposal work, and forming roads, etc. Lump sum.				9,000/-
				Grand Total.	Rs.	3,32,000/-

Sd. W. H. Murphy,

EXECUTIVE ENGINEER.

"C O P Y"

T. N. Thangavelu Mudaliar

SUPERINTENDENT, RESIDENT'S OFFICE.

Enclosure II (4)

Proceedings of an informal meeting held in the President's Chambers, Public Offices Buildings, on Friday, the 14th September 1934.

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Present. - The President, Municipal Commission,
Colonel H.E.Stanger-Leathes, K.H.S., I.M.S., A.D.M.S.
Major R.B.Price, D.S.O., R.A.M.C., D.A.D.P.
Lieut. Col. J.B.Hance, I.M.S., Residency Surgeon,
Capt. R.E.Wood, R.E., A.C.R.E.,
The Health Officer,
The Executive Engineer, and
Dr. Fowler.

- - -

At the informal meeting the report submitted by the Executive Engineer on the scheme proposed by Messrs. Activated Sludge Ltd., for sewage disposal in the Station, was discussed. Dr. Fowler explained the working of the proposed sewage disposal plant. The Executive Engineer pointed out on the map the area to be served by the proposed scheme and the areas to be dealt with later on. The scheme was generally approved by all present, except that the A.D.M.S., objected to the proposed route that the refuse lorries would take in order to dump their contents at the disposal works, owing to its close proximity to the British Military Hospital Buildings.

Sd. L.J.MacIver,
PRESIDENT, MUNICIPAL COMMISSION.

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"C O P Y"

S.No. 16

B4

D.O.No. F.428-34/R.O.II

Issued. 15/12/34.

(Camp) Mercara,
14th November 1934.

Underground sewerage scheme for the main bazaar area in the Civil and Military Station of Bangalore.

My dear Glancy,

Please refer to my confidential Express demi-official letter No. 125-T, dated the 30th December 1933, regarding the extension of the underground sewerage scheme for the main bazaar area of the Civil and Military Station of Bangalore. I have since obtained from the Sanitary Engineer to the Government of Mysore a detailed report containing his views and criticisms of this scheme. A sewage-disposal scheme has also just been received from the Municipal Commission. As it will take time for this report and the scheme to be thoroughly examined, and as I am inclined to think, as I have already said, that proper arrangements for the disposal of sewage should be made before the underground sewerage scheme is extended, I have not made

provision

provision in the Assigned Tract budget for 1935-36 for carrying out sections A and B of the Underground Sewerage Scheme.

Yours sincerely,

O/C

The Hon'ble Mr. B.J. Glancy, C.S.I., C.I.E., I.C.S.,
Political Secretary to the Government of India,
Foreign and Political Department,
NEW DELHI.

ASB
14.11.

D.O. No. F.428-34
R.O.II

26th December 1934.

SEWAGE DISPOSAL SCHEME.

My dear Dr. Fowler

With reference to our conversation a few days ago, I write to say that the Resident would be glad to see you and Mr. Kennedy at the Residency at 10.30 a.m. on the 2nd of January to discuss the sewage disposal scheme. I am asking MacIver and Murphy to come too; and I shall be there myself.

With best wishes to you for Christmas and the New Year.

Yours sincerely.

JC Lowe
26/12

Dr. Gilbert Fowler,
Central Hotel,
Bangalore.

J.

137

D.O. No. F.428-34 / R.O.II

26th December 1934.

SEWAGE DISPOSAL SCHEME.

My dear MacIver, / My dear Murphy

The Resident has arranged to see Dr. Gilbert Fowler and Mr. Kennedy at the Residency at 10.30 a.m. on the 2nd of January to discuss the sewage disposal scheme; and I am desired to say that he would be glad if you and Murphy / MacIver could also be present.

I have written direct to Murphy / MacIver also; and I hope that it will be convenient for you both to be present. I shall be there myself too.

Yours sincerely,

O/C

26/12

L. J. MacIver, Esq., I.C.S.,
President, Municipal Commission,
Civil and Military Station, Bangalore.

W. H. Murphy, Esq., M.B.E.,
Municipal Executive Engineer,
Civil and Military Station, Bangalore.

B.

Activated Sludge Ltd

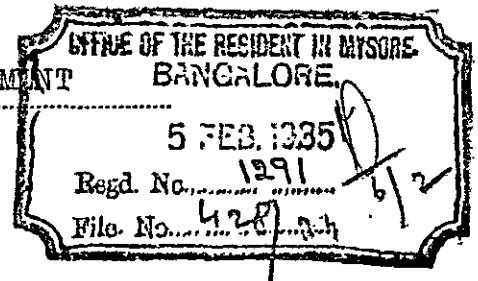
(Incorporated in England).

TELEGRAMS:
FOWLER, CENTRAL, BANGALORE.

REPRESENTATIVE FOR INDIA
AND THE EAST:
DR. GILBERT J. FOWLER,
CONSULTING CHEMIST.

CENTRAL HOTEL,
BANGALORE,
S. INDIA.

The Hon. Lieut.-Col. C.T.C. Plowden, C.I.E. February 5th, 1935.
Resident in Mysore,
BANGALORE.



Ref. GJF/43A Subject BANGALORE CANTONMENT SEWAGE DISPOSAL.

Dear Colonel Plowden,

I have just received a supply of illustrated catalogues from Messrs. Activated Sludge Ltd. As promised at our interview on the 2nd January I have pleasure in sending you herewith two copies of this catalogue herewith which I hope you will find of interest.

Yours sincerely,

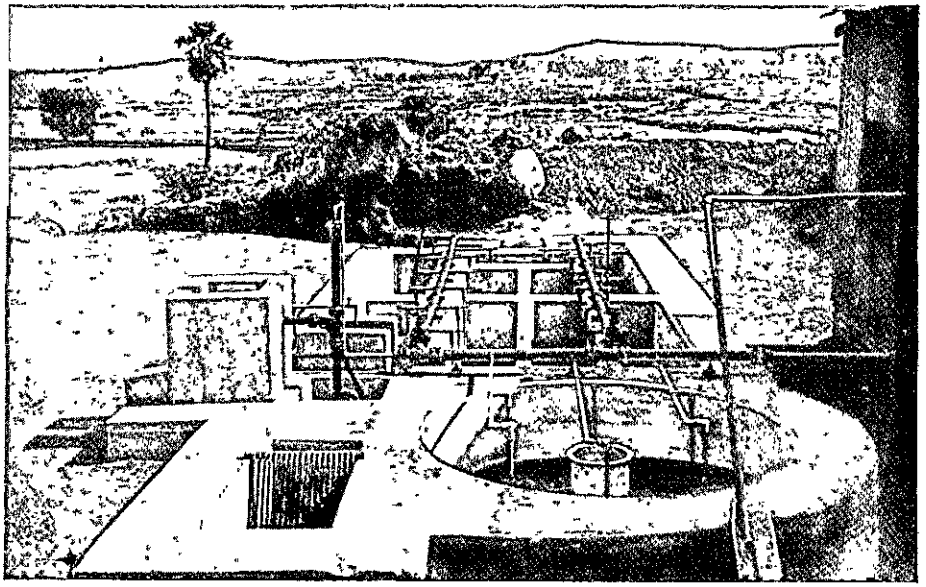
Gilbert J. Fowler

Please ack. receipt with thanks. I asked for these because I thought they might be useful to you in considering some scheme as indicating the extent to which this system has been adopted by [illegible]

JM

cities + Empire states throughout the world
It was possible that the QPI have not much
info on them or the people

Yours
Sgt



ACTIVATED SLUDGE PLANTS IN INDIA

By

DR. G. J. FOWLER, F.I.C.

WITH THE COMPLIMENTS

OF

ACTIVATED SLUDGE LIMITED

JAN. 1935 LONDON

NOTES ON ACTIVATED SLUDGE PLANTS IN INDIA

By

DR. G. J. FOWLER, F.I.C.

THERE are altogether nine Activated Sludge plants in actual operation in India; two more have been in satisfactory operation but have been closed down at the end of their experimental periods. The total number of plants in operation at one time or another is thus eleven.

All the Activated Sludge plants in India have been kept under scientific supervision, at any rate during the earlier periods of their operation, and consequently they are all virtually scientific experimental stations by means of which the very varying conditions such as are met with in India have received careful study, and thereby considerable experience has accumulated, which is embodied in the design of installations now under consideration.

The following notes give brief summaries of the studies made and the results obtained from the installations set out in the accompanying table.

ACTIVATED SLUDGE PLANTS IN INDIA

Place.	Population (*approx.*).	Date When Put In Operation
Jamshedpur - - -	6-8,000	1921
Indian Institute of Science, Bangalore - - -	400	1922
*Ambarnath - - -	100	1924
Sibpur Engineering College, Calcutta - -	300	1926
Madura Mills, Tuticorin	3,000	1928
*Experimental Plant, Nagpur Municipality -	4,000	1929
Empress Mills Model Village, Nagpur - -	2,000	1930
Agricultural College, Coimbatore - -	1,500	1930
Madura Mills, Ambasamudram - - - -	8,000	1932
Ishapore Rifle Factory, (Extension) - - -	2,000	construction just completed, April 1934.
Bhatpara Municipality -	(Sludge reactivation)	construction just completed, April 1934.

All the above plants continue in satisfactory operation except those marked * which were closed down at the end of the experimental period.

Jamshedpur. This was the first plant to be installed in India and is one of the most satisfactory examples of the advantage of the combination of the Activated Sludge process in the service of agriculture which exists up to the present. A full account of the construction of the plant, of the earlier observations, of the agricultural results obtained and of the cost involved is given in a paper by Messrs. Temple and Sarangdhar, published in the *Agricultural Journal of India*, Vol. XIX, Part 4, July 1924.

The sludge being well oxidised could be discharged in suspension in the effluent on to agricultural land; this method is analogous to the manuring of Egyptian cotton fields by the silt-laden waters of the Nile. It was found possible in this way gradually to change totally barren land (known as *mourum*) into fertile soil, on which very satisfactory crops were grown.

When the sludge and effluent were applied to good paddy land, extraordinary results were obtained in the growth of sugar-cane.

Comparative trials showed Activated Sludge to have quite extraordinary value as an organic manure. It was found that, when used under the right conditions, one ton of Activated Sludge was the equivalent of two tons of sulphate of ammonia or fifty tons of cow dung. The sugar-cane yield was nearly three times the crop produced at other centres where crude sewage was employed as a fertiliser.

Indian Institute of Science, Bangalore. This plant was designed for a population of 200 and came into operation in July 1922. It has, however, been continually used for nearly 400 persons, the volume of

sewage per head being about 18 gallons per day. The plant commands fourteen acres of ground on which the effluent is easily absorbed.

This plant was still functioning satisfactorily in July 1934. Throughout this period it has been under the supervision of the Head of the Department of Biochemistry and has played its part in the training of the Biochemical students.

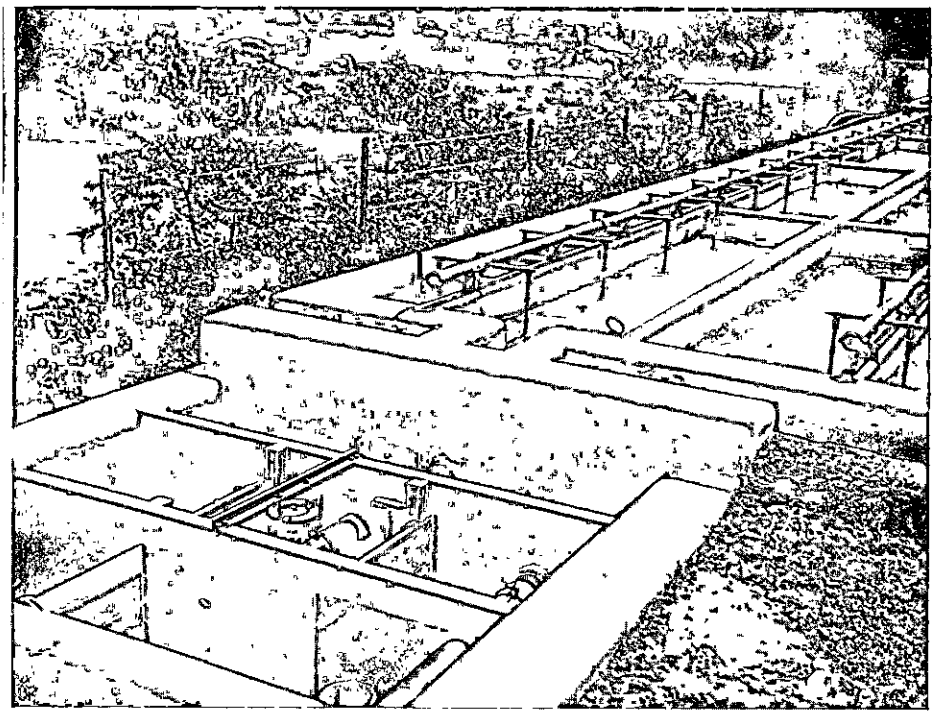
An exhaustive report in regard to its working was published in the *Journal of the Indian Institute of Science* by Mr. N. Swaminathan in 1929 (Vol. 12 A, Part IX, pp. 131-151).

In an address by Sir P. C. Ray entitled " Reaping a Golden Harvest from a Barren Waste," published in Bengali, he refers to this installation. Photographs of the plant are given in the reprint of the address and also one of Sir P. C. Ray himself holding an enormous papaiya fruit grown on the land fertilised by the sludge and effluent.

Ambarnath. This plant was installed in 1924 and was intended to be an experimental plant for the industrial town into which it was hoped Ambarnath would develop. Unfortunately this hope did not materialise and even the small population of one to two hundred which the installation was expected to serve was not reached.

Nevertheless, for some years the plant was operated quite successfully. A small area of the hillside was irrigated by the effluent and gave quite good crops of vegetables. A certain proportion of the sludge was dried and the Executive Engineer reported that he had obtained exceptionally fine roses by its use. There was

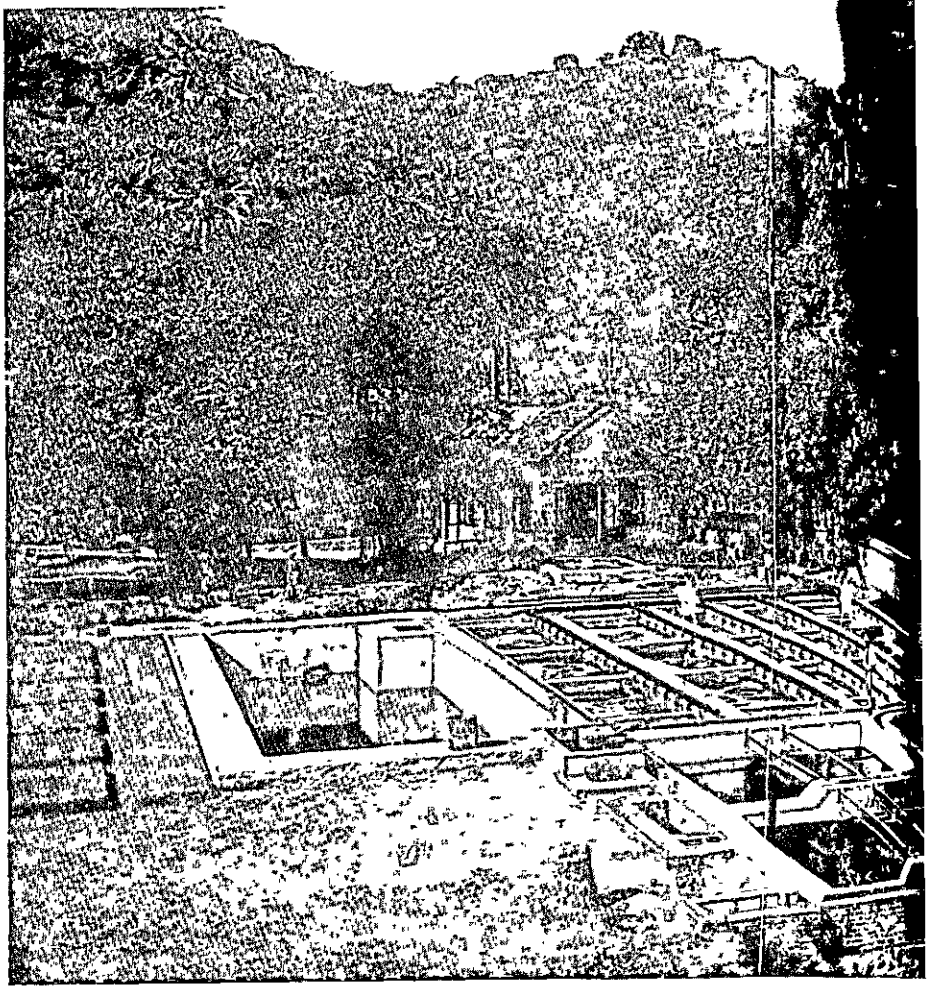
no nuisance in connection with the operation of the plant, but eventually it was closed down as the population contributing to the sewers was hardly sufficient for its economical operation.



ACTIVATED SLUDGE PLANT—SIBPUR

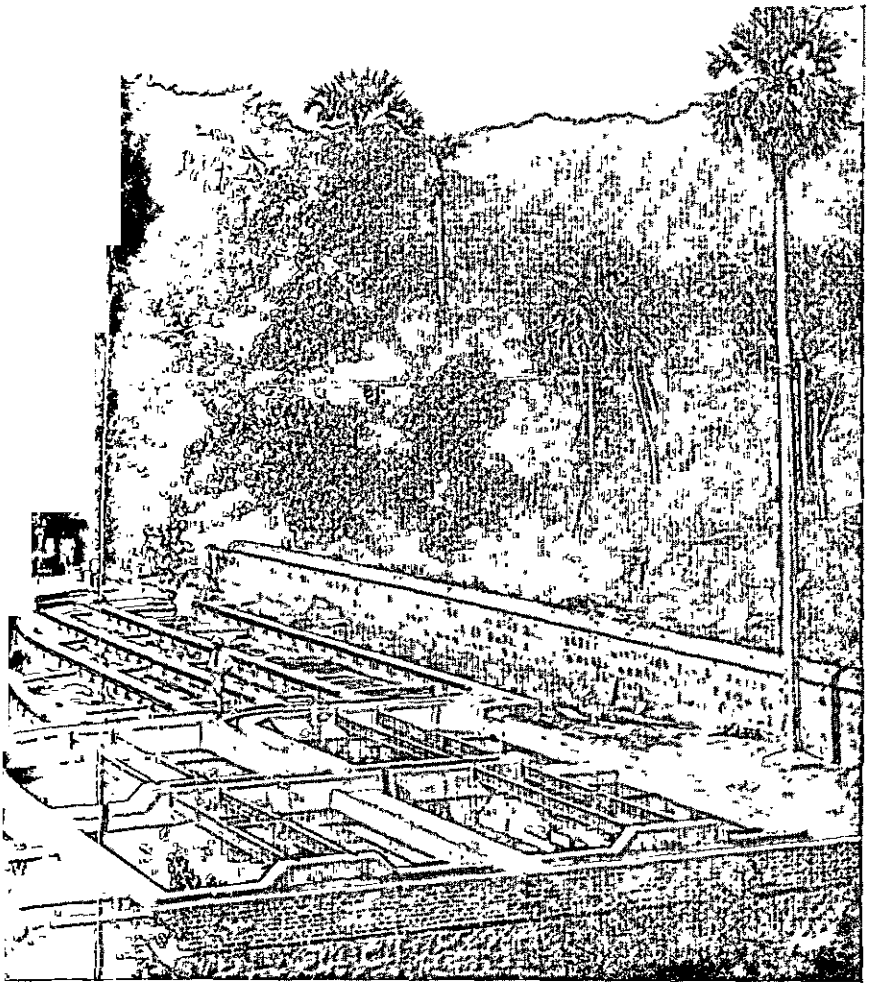
Sibpur Engineering College. The design for this installation, which was put down under the supervision of the Department of Public Health of Bengal in 1926, was based on English practice. Moreover, the full

MADURA MILLS—AMBA



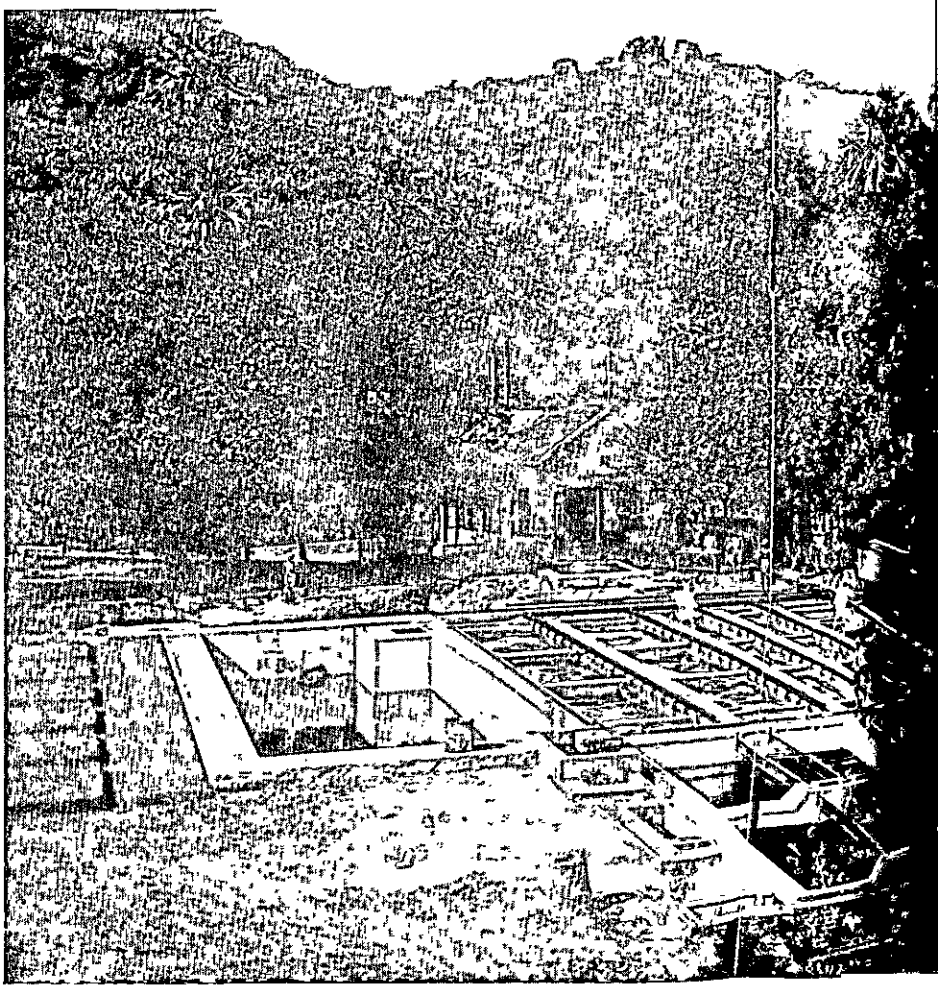
GENERAL VIEW OF ACTIVATED SLUDGE PLANT—SETTLEMENT

-AMBASAMUDRAM



DGE PLANS--SETTLEMENT TANKS IN THE FOREGROUND

MADURA MILLS—AMBASA



GENERAL VIEW OF ACTIVATED SLUDGE PLANT—SETTLEMENT

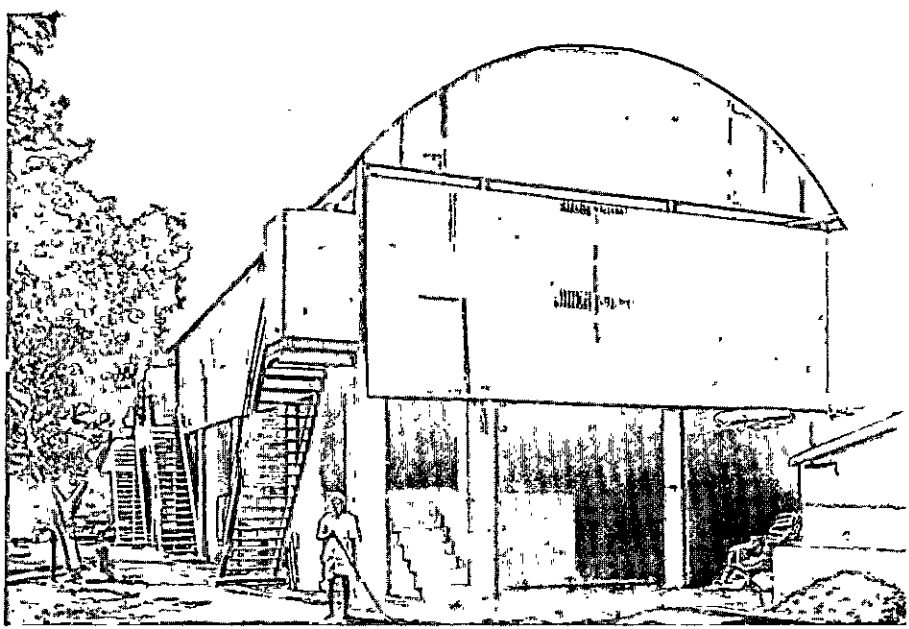
population for which the plant was designed was never actually connected up. It was found in consequence that the plant was *too large* for the work which in fact it had to do. The result of this state of affairs was that the sewage was almost completely oxidised and the sludge actually burnt out, so that very little sludge accumulated. The construction of the tanks was therefore modified in such a way as to reduce the capacity. After this modification the plant worked on the whole quite satisfactorily. A special difficulty which had to be overcome was the recurrence of periods of vacation when there was practically no sewage connected to the plant. With experience, however, conditions were so arranged that the plant could be put into operation after the vacation with a minimum loss of time, a certain nidus of fairly healthy sludge being maintained during the resting period.

At first there was no demand for the sludge for agricultural purposes owing to prejudice on the part of the Estate *malis*. This has now been overcome and there is keen competition for the use of the sludge for the staff gardens.

Madura Mills, Tuticorin. This plant was erected in the Mill compound, where space was very limited and where it was important to avoid nuisance. The plant was therefore built immediately beneath the latrine structure. Nevertheless, except just at the inlet where the fresh latrine sewage enters, there is no smell whatever. An interesting feature of this plant is that, owing to the scarcity of water, sea-water was used for flushing the latrines. Nevertheless the plant functioned perfectly well, the only difference between the

sea-water effluent and the effluent from a fresh-water installation being that the former showed a high content of nitrites, a phenomenon which is characteristic of the oxidation of organic matter in sea-water. There was no nuisance from the sludge, which could be readily dried out on a small sand filter.

Altogether the results were so satisfactory to the Firm that they afterwards ordered a much larger plant for their Mills at Ambasamudram, which will be referred to later.



MADURA MILLS- TUTICORIN

The Walls of the Activated Sludge Plant can be seen below the Latrines.

Experimental Plant, Nagpur Municipality. This plant was put down in order to study the best method of treatment for the sewage of Nagpur prior to the use of the effluent for land irrigation. Side by side with this plant a Bio-aeration plant on the Simplex system was installed and also a septic tank.

The results from the three methods of treatment were very carefully recorded and are embodied in a report by Messrs. Williams and Temple, the Consulting Engineers for the scheme, which was published on December 11th, 1930. It was found that the Activated Sludge plant could purify the sewage satisfactorily in about two-thirds of the space required by the Bio-aeration process. The sludge from the Activated Sludge plant was brown and well oxidised, that from the Bio-aeration plant was grey and imperfectly oxidised, but could be brought into "condition" by passing it through the Activated Sludge plant.

At the close of the experimental period and subsequent to the publication of the report by Messrs. Williams and Temple, all three plants were closed down.

No final decision has been reached as to the method to be employed for dealing with the sewage of Nagpur. The Municipal Chemist is at present on study leave in England in order to obtain the latest information from the large plants in operation there.

Empress Mills Model Village, Nagpur. This plant was designed by Mr. F. C. Temple in collaboration with Messrs. Activated Sludge Ltd. and provides for the complete treatment both of sewage and storm water from the Model Village of Indora planned out

by the Empress Mills Co. for the residence of their employees. As the plant is close to the road, it was of first importance that no nuisance should be created. For some time after the plant was put into operation the full population it was intended to serve had not come to the village, so that it was unnecessary to work the plant to its full capacity and aeration was only continued for about six hours per day. Nevertheless, the efficiency of the plant was such that excellent results were obtained, the effluent being well within the standard of purity recommended by the Royal Commission on Sewage Disposal, and the sludge being of good quality, although the percentage of nitrogen was somewhat lower than usual, owing to the aeration being shut off for a large proportion of the day. Under such conditions some of the nitrogen in the sludge tends by well-known biochemical re-actions to go back into solution in the effluent, where it appears as ammonia or nitrates or is sometimes evolved as free nitrogen.

The sludge and effluent were satisfactorily used for the growing of crops.

Agricultural College, Coimbatore. This plant was designed to meet the numerous cases in India where open sullage drains are made use of for liquid waste, while the night soil is separately collected. In consequence the installation was provided with so-called macerating tanks into which the night soil could be directly " dumped " from the carts. Further, the aeration tanks were designed with the object of confining the treatment of the liquid portion of the mixed night soil and sullage to simple clarification; three-

quarters of the aeration space being devoted to the oxidation of the sludge in order to obtain a product which could be readily dried and transported as manure or sent on to the irrigation fields in suspension in the effluent.

Some difficulty was encountered owing to the very large quantity of mineral grit which found its way through the sullage drains into the macerating tanks, causing these to be very quickly silted up and put out of action. Ordinary silt traps appeared to be of no practical use: the addition of two more macerating tanks improved the situation, but the plant is still handicapped by this difficulty.

Notwithstanding, a satisfactory effluent was obtained free from suspended solids and in which nitrification was actively in progress. The sludge produced was used for pot-culture experiments, where it was found that the response of paddy to dried sludge was three times as great as to farmyard manure. Owing to financial stringency, it has not been possible to provide a full compressor equipment, so that aeration has not been continuous throughout the 24 hours; when this is possible, even more satisfactory results may be anticipated. The gross working expenses of the plant come to about one rupee per head per annum of the population served. In practice a considerable return should be obtained from the effluent and sludge. So far it has not been possible to arrange for the use of the effluent on the irrigation fields.

Madura Mills, Ambasamudram. This plant is the second which has been installed by the Madura Mills Co. who were encouraged to adopt the Activated

Sludge process for the treatment of the sewage from their new Mills at Ambasamudram owing to the success of the first plant at Tuticorin.

The site being very rocky, a good deal of blasting was needed during the excavation for the new tanks. In consequence of this, it was decided to instal a plant large enough for the ultimate population of 8,000 in the first instance. The plant was put into operation in December, 1932, and some judgment was required in deciding how much of the available aeration space should be employed to deal with the sewage from the population then available, since there were indications in the earlier stages of working of " burning " of the sludge owing to over-oxidation. However, with careful supervision a right adjustment was made and an excellent effluent obtained which it is intended to use on the neighbouring paddy fields. The plant has been recently inspected by the Deputy-Director of Agriculture for the District, who, it is understood, was extremely pleased with its efficiency.

Ishapore Rifle Factory. For a number of years the Military authorities have been conducting experiments with various aeration processes for the purification of the sewage from the different depots in the Ishapore Estate. As a result of these experiments, it was decided to extend the plant for the Workmen's Lines by provision of extra aeration tanks provided with diffusers and the special form of Air Compressor designed by Messrs. Activated Sludge Ltd. These alterations have only recently been carried out and results are awaited.

Bhatpara Municipality. The main works at

Bhatpara consist of Bio-aeration tanks on the Simplex principle. In order to ascertain the effect upon the sludge reactivation by Diffused Air, a channel was left in the original installation which could, if desirable, be fitted up with the necessary diffusers to be connected with a suitable compressor. It is hoped that arrangements can be made carefully to investigate the effect of this addition to the plant. It is of a purely experimental character, since in other combined Bio-aeration and Activated Sludge plants a much larger proportion of the total aeration space is usually given to aeration by Diffused Air.

FOR FURTHER PARTICULARS OF THE
ACTIVATED SLUDGE PROCESS

APPLY TO:—

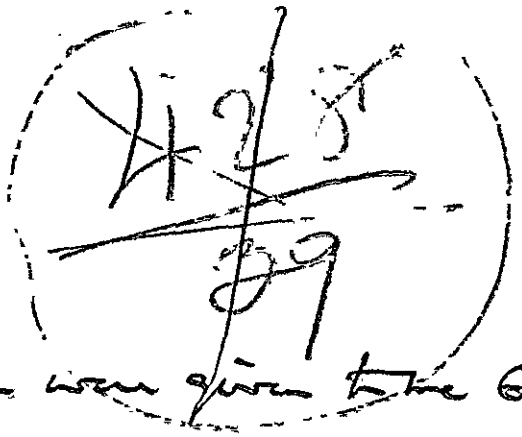
ACTIVATED SLUDGE LIMITED

(INCORPORATED IN ENGLAND)

CENTRAL HOTEL, BANGALORE

SPECIALISTS IN AND CONTRACTORS FOR
PNEUMATIC, HYDRAULIC, ELECTRICAL AND MECHANICAL
EQUIPMENT FOR
ACTIVATED SLUDGE PROCESS PLANTS

42-8
34



These were given to the Eng
Dr. Gilbert Fowler for Resident's
information.

LGTC
12.5.35

Rec'd

They may be kept in
office with R.O. file
relating to the disposal
of sewage of the C & M SC Nr.

14/5/35.

LGTC
16/5

Enclosure V

Activated Sludge Ltd

S. No. 28 (United States)

(Incorporated in England).

TELEGRAMS:
FOWLER, CENTRAL, BANGALORE.

REPRESENTATIVE FOR INDIA AND THE EAST
DR. GILBERT J. FOWLER,
CONSULTING CHEMIST.

CENTRAL HOTEL,
BANGALORE,
S. INDIA.

OFFICE OF THE RESIDENT IN MYSORE.
BANGALORE.
13 FEB. 1935
Rcd. No. 1555
File. No. 428/34

February 12th, 1935.

Major G. C. N. Edwards,
Residency Park,
BANGALORE.

Ref. GJF/43A Subject BANGALORE SEWAGE DISPOSAL.

Dear Major Edwards,

1. As promised at the interview at the Residency on 2nd January 1935, I now send you some figures showing the composition of the effluent discharged on to the Sewage Farm areas at Poona and of the financial returns received therefrom. I hope you will find them of interest in relation to the conditions at Bangalore.

2. Following our telephone conversation the other day I should feel obliged if you will send me a few ounces of the sample of Activated Sludge sent to you, so that I may personally examine it and see how far it is a representative sample.

Yours sincerely,

Gilbert J. Fowler.

Send dual circ from 2
Imperf Tbre
13/2

JM

Extract from D.O. No. 3553 of 1934.

Poona Water - Works Office,

POONA, 8 May, 1934.

Dear Dr. Fowler,

Ref:- Your para 4. I give below the information you require:-

	Total sewage pumped. Mil. Galls.	Total Nitrogen. lbs	Gross receipts. Rs
1930-31	1196	404,974	64,536/-
1931-32	1340	476,729	79,283/-
1932-33	1771	679,988	87,000/-

Main crop. Sugar-cane 55 per acre getting 300 lbs of Nitrogen.

Other perennials 27½ -do-

You will note from this that last year we pumped 1771 Mil. Gls. of sewage and lifted against 105 ft. head. The actual cost of maintenance and pumping etc., was Rs 83,360/- and the gross receipts from sale of effluent was Rs 87,000/-.

JM

STATEMENT showing the average results of complete Analysis of undiluted effluent during 1929-30.

POONA EFFLUENT FARM.

S. No	Particulars	Parts per 100,000	Remarks.
1.	Ammoniacal Nitrogen.	3.14	Average of 12 samples one sample analysed every month.
2.	Albuminoid do	0.68	
3.	Nitrate & Nitrite Nitrogen	Nil	
4.	Total Nitrogen	3.82	
5.	Solids on evaporation	87.5	
6.	Solids on ignition	72.0	
7.	Chlorides	7.5	
8.	Total carbonates	17.3	
9.	Sand as insoluble silicate	16.0	
10.	Iron and Aluminium oxide	5.84	
11.	Calcium oxide	7.19	
12.	Magnesium oxide	9.0	
13.	Potash as K_2O	2.42	
14.	Phosphoric acid as P_2O_5	2.85	

Effluent is a complete manure as it contains all the manurial ingredients viz. Nitrogen, Potash and Phosphoric acid in sufficient quantities.

JM

STATEMENT showing the quantity of manurial ingredients in effluent received at the head of Distributory No. 5 for disposal during the different months.

Month	Discharge in cusecs	Nitrogen (in lbs.)	Potash (in lbs.)	Phosphoric acid (in lbs).
1929.				
September	2.89	499.4	279.2	362.0
October	2.90	552.6	443.2	454.0
November	2.74	540.2	384.8	383.3
December	2.63	549.5	404.7	430.2
1930				
January	1.83	410.0	237.1	335.9
February	2.13	510.6	265.6	297.8
March	1.37	398.8	156.9	102.0
April	3.39	638.0	568.0	628.0
May	7.34	1498.4	840.0	1287.0
June	7.37	1138.3	613.0	764.0
July	6.82	1210.7	426.9	570.4
August	5.58	1128.7	693.3	857.8
September	7.15	1277.7	1011.3	764.0
October	7.46	1411.0	928.6	607.2
November	6.60	1085.8	409.4	790.0
December	6.35	1001.5	610.5	579.5
1931				
January	5.34	1026.3	504.0	573.0
February	6.56	1058.5	552.0	393.0
March	6.79	1200.0	425.7	682.7
April	6.46	1162.2	474.6	617.73
May	6.60	1000.3	484.0	591.0
June	7.95	1291.3	720.7	922.3
July	7.52	1327.6	475.0	495.0
August	6.73	1136.2	566.3	867.6
September	3.06	622.1	275.5	343.2

JM

S.W.24

Issued 27-2-35

Ls 28.2.35

DEPARTMENT.

BRANCH.

File No.

Serial No.

Draft Letter / Memorandum / Telegram D.O.

No. F.428-34 / R.O.II. Dated 28/2/ 1935

Class for telegrams

Ordinary / Express / Urgent* / Priority / Clear Line†

*Only for Foreign Telegrams.

†Not for Foreign Telegrams.

To be issued on

Issued on

1st Reminder

2nd Reminder

3rd Reminder

Heading:

Case or Diary No.

If post copy of telegram required p.u.c.

Date of despatch of above

List of enclosures

(Code word for telegrams.)

From

Assistant Secretary to the Resident.

To

Dr.Gilbert J.Fowler,
Central Hotel, Bangalore.

.....

Dear Dr.Fowler.

Please refer to your letter to Major Edwards No.GJF/43A, dated the 12th February 1935. ~~The~~ a sample of "activated sludge" ~~asbestos~~ is sent herewith.

Yours sincerely,

Ls

26.2.35

27/2

S. 5.
MG[illegible]PC—S1—225 (CPS) DOF—(G-1432)—24 4 31—50,000 Pads.

S.N.25

140

No. F.428-34
R.O.II

Issued 18.3.35

From

The Hon'ble Lieut. Colonel C.T.C.Plowden, C.I.E.,
Resident in Mysore.

To

The Political Secretary to the Government of India,
Foreign and Political Department.

Dated Bangalore, the 18th March 1935.

BANGALORE SEWAGE DISPOSAL SCHEME.

Sir,

I have the honour to refer to the correspondence ending with memorandum from the Government of India, Foreign and Political Department, No. F.228-A/32, dated the 22nd February 1934, regarding the underground sewerage scheme for the general bazaar area in the Civil and Military Station of Bangalore.

S.N.3
F.428-34

2. So far back as in June 1922, at the time of the inauguration of the underground sewerage scheme, Mr. (now Sir William) Barton expressed the opinion that the installation of a sewage-disposal plant was an integral part of the complete scheme and should be one of the first works to be carried out in pursuance of the scheme - vide his letter No. 5350/300-1920, dated the 30th June 1922. As I have already told the Government of India demi-officially, I am also definitely of the same opinion; and I consider it essential that a proper scheme of sewage-disposal should be put in hand before there is any further extension of the underground drainage system. The Military authorities and the Residency Surgeon concur in the view that a sewage-disposal scheme is urgently required in the interests of the health of the troops and of the public. Mr. B. R. Garudachar, B.A., C.E., M.I.M. and Cy.E., M.R.San.I., Sanitary Engineer to the Government of Mysore, who at my request examined the underground sewerage

S.N. 17
F.82-97
para 4.

S.N. 1
F.428-34

scheme

scheme for the main bazaar area in the Civil and Military Station of Bangalore, has also expressed the view that early measures should be taken for the installation of proper sewage-disposal works. A copy of his report is enclosed for information.

Encl. to S.N.12 / F.428-34

3. Accordingly I instructed the President, Municipal Commission, Civil and Military Station, Bangalore, some time ago, to prepare and submit for my consideration a carefully thought out and complete scheme for the disposal of the sewage of the Station; and I now submit to the Government of India, for their technical scrutiny and orders, a copy of a letter from the President, Municipal Commission, No. 9254/33, dated the 5th October 1934, together with its enclosures and certain other papers, (detailed list attached), containing the Commission's proposals for the installation of a sewage-disposal plant in the Civil and Military Station of Bangalore.

S.N.15 / F.428-34

4. As the matter is highly technical, I feel diffident to express an opinion on the scheme; but it seems to me that a scheme such as the one now submitted to the Government of India, with such modifications as they may consider necessary, is well suited to the requirements of Bangalore and should prove satisfactory. If the Government of India generally approve of the scheme, I shall on receipt of their orders and after such further examination as may be necessary, submit it for their administrative approval. I shall also at the same time submit proposals for the financing of the scheme.

5. I may explain that the scheme affects the Mysore Government indirectly, because the plant can from its location and design be adapted to deal with the sewage not only of the Civil and Military Station but also of Bangalore City. There is also the question whether the Mysore Government would be prepared to purchase the effluent from the sewage-disposal works, which will be a product of very high value. If therefore the Government of

India

India should approve of the scheme in principle, I should be glad to be permitted to discuss it with the Government of Mysore before putting forward proposals as to the way in which it should be financed.

I have the honour to be,

Sir,

Your most obedient servant,

O/C 17/8/35

Lieut. Colonel,

R E S I D E N T.

BJ

DETAILED LIST OF ENCLOSURES.

I. Report dated the 5th July 1934 of Mr. B.R.Garudachar, Sanitary Engineer to the Government of Mysore, on the under-ground Sewerage Scheme for the main bazaar area in the Civil and Military Station of Bangalore.

II. Letter from the President, Municipal Commission, Civil and Military Station, Bangalore, No. 9254/33, dated the 5th October 1934, forwarding proposals for the installation of a sewage-disposal plant in the Civil and Military Station, with the following enclosures:-

(1) Tender submitted by Messrs. Glenfield and Kennedy Ltd., on behalf of Messrs. Activated Sludge Ltd., including the following:-

(i) Drawing No. F.F.2486 P.10173
(ii) " F.S.932 P.10174
(iii) " F.S.937 P.10175
(iv) Specification of proposed Activated Sludge plant scheme - Drawing No.F.F.2486-and estimate.
(v) Drawing No.F.F.2485 P.10172.
(vi) Drawing No. H.F.2369 P.

(2) Letter from Messrs. Glenfield & Kennedy Ltd., on behalf of Messrs. Activated Sludge Ltd., dated the 5th May 1934 with the following diagrams:-

(i) Drawing No. F.S.938 P.10194
(ii) " F.S.939 P.10195

(3) The Municipal Executive Engineer's report on the sewage-disposal scheme together with:-

(i) A map of the Civil and Military Station of Bangalore showing (a) the proposed site for the location of the plant and (b) main sewers and outfalls of the Station.

(ii) Estimate for constructing the plant.

(4) Proceedings of an informal meeting with the Military authorities and the Residency Surgeon held on 14-9-1934

III. Map of the Civil and Military Station showing the area already sewered and proposed to be sewered.

IV. Illustrated circular of Messrs. Activated Sludge Ltd.

V. Extract from letter dated the 12th February 1935 from Dr.Gilbert J. Fowler furnishing figures showing the composition of the effluent and discharged on to the Sewage Farm areas at Poona and of the financial returns received therefrom.

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BJ

144

S. No. 25

Issued MW 23.3.

D.O.No. F.428-34 / R.O.II

23rd March 1935.

BANGALORE SEWAGE DISPOSAL SCHEME.

My dear Maclver.

I am desired to invite your attention to the enclosed cutting from "The Hindu", dated the 11th February 1935, and to suggest that it might be possible for Murphy or yourself, in informal discussion with the City Municipal authorities, to ensure that the ultimate possibility of a joint sewage disposal area and plant for the Civil and Military Station and City is not overlooked. (We are precluded from writing officially to the Mysore Government until we receive the orders of the Government of India).

Yours sincerely,
o/c
Vone 23/3.

L. J. MacIver, Esq., I.C.S.,
Collector and President, Municipal Commission,
Civil and Military Station,
Bangalore.

BJ
23/3

MW

Cutting from Newspaper - "The Hindu", dated 11-2-1935.

- - - - - -

BANGALORE CITY IMPROVEMENT.

UNDERGROUND DRAINAGE SCHEME.

(From our Correspondent.)

Bangalore, February 12.

Several estimates, calculated to improve the civic amenities of the citizens of Bangalore City, were sanctioned by the City Municipal Council, at its adjourned meeting held this evening.

A sum of Rs.41,715 was sanctioned for the supply of water to the jail extension and the Tippa Setty Mutt extension. Another sum of Rs. 14,000 was sanctioned for the underground drainage to the new extension to the west of the Central Jail (Tippa Setty Mutt)

The Council considered the Government Order, giving administrative sanction to the scheme of underground drainage in the City. According to this scheme, a sum of Rs.1,65,000 will be spent for laying a main sewer line in the City from Sultanpet up to the sceptic tank in the Sunkal Farm. The cost of the work will be met in the first instance by the Municipality from the loan of Rs.2 lakhs sanctioned for underground drainage. The Government, in their order, have stated that work is to be carried on by the Bureau of Sanitary Engineering, with the establishment and tolls and plants charges to be paid by the Municipality at 18 per cent, except in respect of the cost of pipes, pumping plant and machinery and acquisition of lands included in the estimate. The work is to be carried out from the municipal funds in the first instance and the time when this quota should be paid to the Municipality is to be left to the Government to be fixed later on when financial conditions improved.

A committee consisting of the following officials and gentlemen has been appointed by the Government to investigate into the question of the final disposal of the sewage and consider other questions connected with the entire scheme of the City: The Director of Health, the Chief Engineer, the Deputy Commissioner, Bangalore, President, Bangalore City Municipality, the - - -

Municipal

Municipal Commissioner, Sanitary Engineer and Mr. J.E.A.D'Cruz.

The Council, in recording the above order, resolved to request the Government to appoint the Municipal Engineer also as a member of the Committee.

---:O:---

"C O P Y"

SUPERINTENDENT, RESIDENT'S OFFICE.

BJ

S.N. 27

(47)

Issued
NB
6/6/35.

PROCEEDINGS OF THE HON'BLE THE RESIDENT IN MYSORE.

No.F.428-34
R.O.II.

Dated Bangalore, the 6th June 1935.

ORDER.

The Hon'ble the Resident is pleased to sanction the payment of an honorarium of Rs.250/- (Rupees two hundred and fifty only) to Mr. B.R. Garudachar, Sanitary Engineer to the Government of Mysore, Bangalore, for the report prepared by him in connection with the underground sewerage scheme for the General Bazaar area in the Civil and Military Station of Bangalore. The amount shall be paid by the Municipal Commission out of the annual Government grant of Rs.50,000/- for public health works.

for Secretary 6/6.

SECRETARY TO THE RESIDENT.

NB

To the President, Municipal Commission, Civil and Military Station Bangalore, with the request that the amount may kindly be drawn and sent to Mr. Garudachar direct. The Government of Mysore have been requested to permit Mr. Garudachar to receive the honorarium.

To the Municipal Auditor, Civil and Military Station, Bangalore.

PKH

S.N.28 148

D.O.No.F.428-34.
R.O.II.

Issued 6/6/35

6th June 1935.

UNDERGROUND SEWERAGE SCHEME FOR THE GENERAL BAZAAR AREA IN THE CIVIL AND MILITARY STATION OF BANGALORE.

Mysore M Anantaraman

I am desired to refer to the correspondence ending with Mr. Ramaswami's demi-official letter No.Pol.598/P.H. 24-33, dated the 7th December 1933, and to say that the Resident will be glad if you will kindly convey his thanks to Mr. Garudachar for the assistance rendered by him in connection with the underground sewerage scheme in the Civil and Military Station. An honorarium of Rs.250/- has been sanctioned for payment to Mr. Garudachar; and the President, Municipal Commission, has been asked to send the amount direct to him. I am to request that he may kindly be permitted to receive it.

2. I am further to express the Resident's grateful thanks to the Government of Mysore for having so kindly placed the services of Mr. Garudachar at his disposal

for

for examination of this scheme.

Yours sincerely,

Love
6/6 d/e

K.V. Anantaraman, Esq., B.A.,
Chief Secretary to the Government of
His Highness the Maharaja of Mysore.

PKH

S.N. 27

149

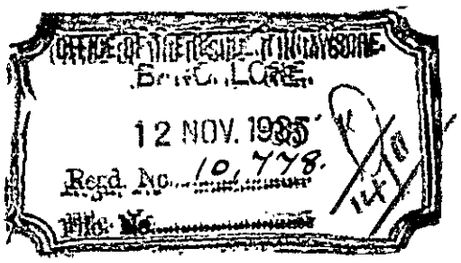
From - The Under Secretary to the Government of India in the Foreign and Political Department, 49

To - The Hon'ble the Resident in Mysore.

Bangalore.

Memorandum No. F.72-A/35.

Dated New Delhi, the 7th November 1935.



Bangalore sewage disposal scheme.

S.N. 25 e.p. 40

Reference your letter No.F.428-34/R.O.II, dated the 18th March 1935.

2. The Government of India have no objection to your discussing the new sewage disposal scheme with the Government of Mysore in regard to financial and other details. They would, however, make it clear that they cannot commit themselves in any manner at this stage as the final sanction to the scheme will depend on the financial details being acceptable.

3. A copy of a note recorded by the Government of India Superintending Engineer, Health Services, after a scrutiny of the available details of the scheme is enclosed for your information.

4. The enclosures sent with your letter referred to above, with the exception of enclosures I and II the letter from the President, Municipal Commission, Civil and Military Station, Bangalore, No.9254/33, dated the 5th October 1934, are returned herewith.

Under Secretary to the Government of India.

(50

1. I think the scheme may be agreed to in principle as the activated sludge process is in satisfactory operation in India as well as in large towns in England.

2. There are many points of detail in the scheme which require fuller discussion but it seems unnecessary, at the present stage to go into these and, in due course, if it is decided to proceed with the scheme, I would like to visit Bangalore and see local conditions.

3. It would seem that the estimated cost is on the low side as, among other items, provision will have to be made for (a) Power line for delivering electric current from the nearest main. This may be a considerable sum (b). The plant will be running continuously and residential quarters for staff appears desirable (c) For continuous running the skilled staff provided (p 13 of Enclosure II) seems inadequate.

4. These points are noted to indicate that when scheme is worked out in detail the cost may be higher than at first anticipated.

Sd/- J.A.R. Brommage,

5/9/35.

Superintending Engineer,

Health Services.

151

Two drafts 9/12-35

Ground 10/12

DEPARTMENT.

BRANCH.

File No.

Serial No.

Draft Letter / ~~Memorandum~~ / ~~Telegram~~

Class for telegrams

Ordinary
Express
Urgent*
Priority
Clear Line†

*Only for Foreign Telegrams.

†Not for Foreign Telegrams.

No. F.428-34 / R.O. II Dated 10th ~~Novr.~~ Dec. 1935

To be issued on

Issued on

1st Reminder

2nd Reminder

3rd Reminder

Heading:

Case or Diary No.

If post copy of telegram required

Date of despatch of above

List of enclosures

S.N.15 / p.20 (M)

(Code word for telegrams.)

S.N.25 / p.40 (M)

S N·29 / c·p49 (M) ~~future~~.

The Secretary to the Resident.

To

The President, Municipal Commission
Civil and Military Station,
Bangalore.

BANGALORE SEWAGE DISPOSAL SCHEME.

Sir,

I am directed to refer to your letter No. 9254/33, dated the 5th October 1934, and to forward for your information copies of the following correspondence:-

(1) Letter from this Residency to the Government of India, Foreign and Political Department, No.F.428-34/R.O.II, dated the 18th March 1935 with list of enclosures.

(2) Memorandum from the Government of India, Foreign & Political Department No.F.72-A/35, dated the 7th November 1935, with a copy of the Superintending Engineer's note and original tenders and drawings of Messrs. Glenfield and Kennedy Ltd.

2. It now rests with the Municipal Commission to submit proposals for financing the scheme. ~~The consideration for until~~ the financial position ~~improves it will~~

~~not~~

Their proposals it must be Vakil's ~~not~~ ~~to~~ present

(52)

does not admit of

~~not be possible to make~~ any grant-in-aid from the revenues of the Assigned Tract.

(big words)

3. I am to add that any formal discussion with the Government of Mysore on the subject should be initiated through this Residency.

I have, etc.,

27/11

30/11.

Secretary to the Resident.

encls. compliance with B.

Two drafts
Draft II issued 21-12

DEPARTMENT.

BRANCH.

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Draft Letter / ~~Memorandum~~ / ~~Telegram~~

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No. F.428-34 / R.O.II Dated 10th ~~Nov.~~ Dec. 1935

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Case or Diary No.

If post copy of telegram required

Date of despatch of above

List of enclosures

S.N.30 (M) / C.P.51

~~Draft~~ I

(Code word for telegrams.)

S.N.26 (M) / c.p.44

The Secretary to the Resident.

To

F.R.Brislee, Esq., I.C.S.,
President, Municipal Commission,
Civil and Military Station,
Bangalore.

BANGALORE SEWAGE DISPOSAL SCHEME.

D.O.

In connection with my official letter No.F.428-34/R.O.II, dated the 10th December 1935, will you kindly refer to my demi-official letter to MacIver No.F.428-34/R.O.II, dated the 23rd March 1935. The Resident would be glad to know the result of any informal discussion which you or Murphy may have had with the City Municipal authorities on the subject of a joint sewage disposal area and plant.

Yours

27/11

30/11.

S. 5.
MGIPC—S1—158(Genl)MFP—(M-1983)—3-5-34—50,000 Pads.